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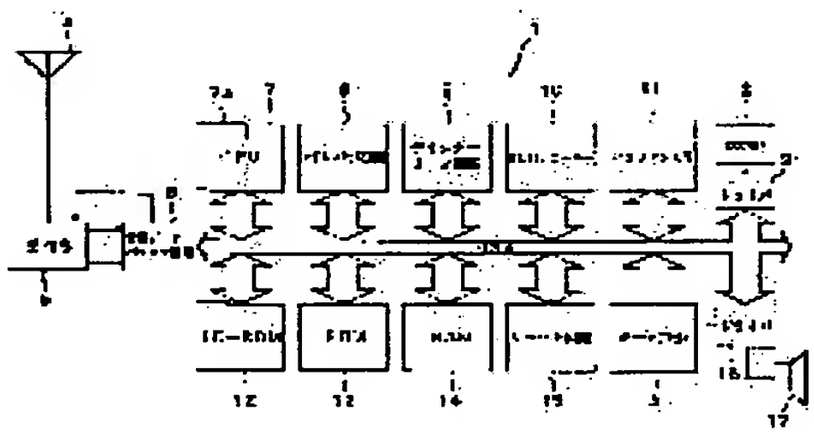
(54) DATA RECEIVER

(57)Abstract:

PROBLEM TO BE SOLVED: To eliminate a message number to discriminate a message number jump in a pager having provision for the message serial number service and to improve the utility environment of the message serial number service by informing a number skip error of one circulation or over to urge the delete operation of message numbers.

SOLUTION: Once a CPU 7 has detected a message with a number, the message is stored in a numbered message data memory area in a RAM 14, an incoming call wait time from preceding arrival of call to this arrival of call is compared with a preceding incoming call wait time. Then when the call wait time from the preceding arrival of call till this incoming call is the longest or a message number skip is detected, deletion of the message numbers in the message data stored up to a preceding time is indicated and when reset operation is confirmed, the message numbers of all messages received up to a preceding time are deleted.



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CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

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CLAIMS

[Claim(s)]
[Claim 1] A receiving means to receive the data with which the number was added, and a storage means to memorize with a number the data received by this receiving means, A comparison means to compare the number received by said receiving means with the newest number memorized by said storage means, The data sink characterized by having a deletion means to delete the number memorized by said storage means when it detected that both numbers were not continuing with this comparison means.
[Claim 2] A receiving means to receive the data with which the number was added, and a storage means to memorize with a number two or more data received by this receiving means, An arrival-of-the-mail spacing storage means to memorize arrival-of-the-mail spacing of the data received by said receiving means, With a comparison means to compare arrival-of-the-mail spacing of the data received last time and the data received this time with arrival-of-the-mail spacing memorized by said arrival-of-the-mail spacing storage means, and this comparison means The data sink characterized by having a deletion means to delete the number memorized by said storage means when it detected that arrival-of-the-mail spacing of the data received last time and the data received this time was over arrival-of-the-mail spacing memorized by said arrival-of-the-mail spacing storage means.
[Claim 3] A receiving means to receive the data with which the number was added, and a storage means to memorize with a number two or more data received by this receiving means, An average storage means to memorize the average of each arrival-of-the-mail spacing of the data received by said receiving means, With a comparison means to compare arrival-of-the-mail spacing of the data received last time and the data received this time with the average of arrival-of-the-mail spacing memorized by said average storage means, and this comparison means The data sink characterized by having a deletion means to delete the number memorized by said storage means when it detected that arrival-of-the-mail spacing of the data received last time and said received data was over the average of arrival-of-the-mail spacing memorized by said average storage means.
[Claim 4] The data sink according to claim 3 with which it will be characterized by to have further a storage control means make arrival-of-the-mail spacing of the data received last time by said average storage means and the data received this time memorize if arrival-of-the-mail spacing of the data received last time by said comparison means and the data which were received this time detects that it is over the average of arrival-of-the-mail spacing memorized by said average storage means.
[Claim 5] A data sink given in either of claims 1-4 characterized by having further a transfer means to transmit the data from which the number was deleted by said deletion means to a storage means other than said storage means.
[Claim 6] When it has further a directions means to direct deletion of said number and deletion of a number is directed for said deletion means by this directions means, it is a data sink given in either of claims 1-5 characterized by deleting said number memorized.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the data sink which receives the data with which the number was added.
[0002]
[Description of the Prior Art] As communication system which sends and receives the text which used the conventional telephone line, there are a wireless paging system, a home banking system, etc. And there is a POCSAG method as a transmitting data format in a wireless paging system.
[0003] However, with development of mobile communication technology in recent years, price reduction of a service use tariff, not only a business youth but a personal youth, and as a result of spread in the younger age group progressing especially, service subscribers increase in number and offer of sufficient service is difficult.
[0004] Thus, the altitude paging system which also needed to make service altitude, consequently was specified by the standard "RCR STD-43" is introduced with the increment in need with recently [rapid], or the escape of a function.
[0005] First, this advanced paging system is explained briefly. The transmit data configuration adopted as this advanced paging system is shown in drawing 19 . In drawing 19 , the data configuration to which 70 is transmitted in 1 hour, and 71 show a cycle configuration, and 72 shows the frame structure of one frame. The data configuration 70 consists of 15 cycles to which the numbers from "0" to "14" were attached, and this shows the cycle transmitted in 1 hour. The cycle configuration 71 consists of 128 frames to which the numbers from "0" to "127" were attached, and this shows the frame number transmitted in 4 minutes. One frame is 1.875 seconds and data of 42 frames are transmitted in 1 minute. The frame structure 72 is classified into eight according to the contents of data in the data for one frame.
[0006] The above-mentioned frame structure 72 consists of synchronizer 1(S1) 72A, frame information (FI)72B, synchronizer 2 (S2)72C, block information bureau (BI)72D, (address-field AF) 72E, vector field (VF)72F, message (field MF) 72G, and idle block (IB)72H.
[0007] The modulation technique and transmission speed of data which synchronizer 1 (S1)72A consists of 1600bps 112 bits by which the binary FSK modulation was carried out, and are transmitted henceforth [block information (BI)] are the convention information which specifies any a binary FSK method / 1600bps binary FSK method / 3200bps4 value FSK method / 3200bps4 value FSK method / of the 6400bps they are.
[0008] Frame information (FI)72B consists of 1600bps WORD [32-bit] by which the binary FSK modulation was carried out, and the information which specifies the frame number of this frame and this cycle number, and a multiple-times transmitting display and its count of transmission is stored. Synchronizer 2 (S2)72C is the timing information for taking receiving timing with the modulation technique and transmission speed which were specified by synchronizer 1 (S1)72A.
[0009] Each field of 72D-72G and idle block (IB)72H are information transmitted at the modulation technique and receiving rate which were specified by the above-mentioned synchronizer 1 (S1)72A, and consist of 11 1-block data transmitted per 160ms. Block

information bureau (BI)72D is a block which stores information used as the below-mentioned (address-field AF) 72E and the origin of vector field (VF)72F, such as a WORD number and numbers of words, and (address-field AF) 72E is the field which stores the address which is the recognition number of the paging point. Vector field (VF)72F are the field which stores information which serves as the nothing below-mentioned origin of message (field MF) 72G in the above-mentioned address field and a pair, such as a WORD number and numbers of words, and message (field MF) 72G are the field which stores the message data according to the gestalt of the data specified by vector field (VF)72F. And idle block (IB)72H are an intact block, and the pattern of "1" or "0" is set here.
[0010] In a block configuration 73 furthermore, to synchronizing signal section 73A 3 blocks of synchronizer 1(S1) 72A, frame information (F1) 72B, and synchronizer 2 (S2)72C are set. To interleave block section (#0-#10) 73B The WORD data of two or more (a maximum of four) phases were interleaved. Each block of block information bureau (BI)72D, (address-field AF) 72E, vector field (VF)72F, message (field MF) 72G, and idle block (IB)72H is set.
[0011] The user using the pager corresponding to this advanced paging system can receive various information messages from various information offer firms, when basic services and these additional services can be chosen, and it can contract per address, for example, a contract of the above-mentioned data utility is made.
[0012] In this advanced paging system, there is the thing "message sequence number service" and "message retransmission service" besides fundamental paging service as one of the services offered using the above data configuration.
[0013] This for every address of a paging receiver (henceforth a pager) While adding the message number according to individual to message data, transmitting to it from a pin center,large side facility within message (field MF) 72G to the pager of the call-in point and making a subscriber recognize the transmitting sequence of message data The storage management of the message data which the pin center,large side also transmitted in the past by this message number is carried out for every address. If the message data with which the message number is flying by the pager side should be received By reporting that there is non-received message data, the resending demand of message data is performed by notifying the message number corresponding to non-received message data to a pin center,large.
[0014] Moreover, reception of this message data that carried out the resending demand calls off non-received information.
[0015] If it explains to a detail, in the above "message sequence number service" and "message retransmission service", a pin center,large side will transmit a message by the 1-block word configuration of message (field MF) 72G corresponding to "message sequence number service" illustrated to drawing 20 .
[0016] In this drawing, K expresses a message checksum. N is message number data division and the cyclic data from 0 to 63 are stored by 5 bits.
[0017] Moreover, R is a message retrieval flag and, as for this R, 1 is always set by the data of the message field corresponding to "message sequence number service." And S is bit data which specify whether a format of this message is displayed in a special format.
[0018] And corresponding to this data, a pin center,large side transmits the message data which added the message number which continued from No. 0 to No. 63 corresponding to the address of the pager a contract of was made, matches this transmitted message data with a message number, and carries out storing management at the existing database.
[0019] Moreover, the gestalt of a message set as the object of this message sequence number service is specified by vector field (VF)72F, and the figure message with a number, the hexadecimal / binary message corresponding to the message of kanji kana mixture, and the alphabetic-character message correspond.
[0020]
[Problem(s) to be Solved by the Invention] However, the next trouble had occurred in this "message sequence number service" and "message retransmission service."
[0021] Information notifies the message number corresponding to non-received message data for non-received message data being in a 1 and pager side to a pin center,large, and since it is

canceled only in the message data which is not received [this] receiving a message, even if business does not have non-received message data, if it does not carry out a resending demand, it cannot reset information.
[0022] Although a 2 and pin center,large side carries out individual management of the message data with which the message number was added by this message number In order to address the 64th message data as a message of the message number of No. 0 and to manage it, ** Although all the message data with a number transmitted in the meantime are set as the object of resending when there is a long duration contractor outside arrival-of-the-mail area, when the contractor has returned to arrival-of-the-mail area, if the message number is flying more than a round, only some non-received message data will be made applicable to resending.
[0023] ** When a contractor returns to arrival-of-the-mail area, a round is taken exactly and there is arrival of message data with a number, the number jump error generated before this message is not reported.
[0024] therefore, data sinks, such as a **-jar which this invention takes an example by such trouble, and it receives, and it carries out the storage management of the message data with a message number, and reports a message number jump, -- it is offering the data sink which improves the use environment in the message data reception with a number as is, enables deletion of a message number about the message with a message number which carried out the storage management and it not only reports the error of a message number jump, but stimulates deletion actuation of a number.
[0025]
[Means for Solving the Problem] A receiving means by which invention according to claim 1 receives the data with which the number was added, A storage means to memorize with a number the data received by this receiving means, It is characterized by having a comparison means to compare the number received by said receiving means with the newest number memorized by said storage means, and a deletion means to delete the number memorized by said storage means if it detects that both numbers are not continuing with this comparison means.
[0026] If it detects that both the numbers that the comparison means compared the number added to each of the data received by the receiving means and the data received last time, and were compared are not continuing according to the data sink of this invention according to claim 1, a deletion means will delete the number memorized by the storage means.
[0027] Therefore, in case the storage management of the data with which a number is added is received and carried out, the message number jump information by the message data with a number which is not received [unnecessary] can be lost by deleting the number of the message data with a message number (it is hereafter indicated as message data with a number) memorized in the past.
[0028] Moreover, a receiving means by which invention according to claim 2 receives the data with which the number was added, A storage means to memorize with a number two or more data received by this receiving means, An arrival-of-the-mail spacing storage means to memorize arrival-of-the-mail spacing of the data received by said receiving means, With a comparison means to compare arrival-of-the-mail spacing memorized by arrival-of-the-mail spacing of the data received last time and the data received this time, and said arrival-of-the-mail spacing storage means, and this comparison means If arrival-of-the-mail spacing of the data received last time and the data received this time detects that it is over arrival-of-the-mail spacing memorized by said arrival-of-the-mail spacing storage means, it is characterized by having a deletion means to delete the number memorized by said storage means.
[0029] While a storage means memorizes with a number two or more data with which the number received by the receiving means was added according to the data sink of this invention according to claim 2, an arrival-of-the-mail spacing storage means memorizes the greatest arrival-of-the-mail spacing of the received data.
[0030] And when arrival-of-the-mail spacing of the data received last time and the data received this time is over arrival-of-the-mail spacing memorized by the arrival-of-the-mail spacing storage means, a deletion means deletes the memorized number.
[0031] Therefore, the information of a number jump error [made / in according to non-received

message data with a number / the mistake] by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0032] Furthermore, a receiving means by which invention according to claim 3 receives the data with which the number was added, A storage means to memorize with a number two or more data received by this receiving means, An average storage means to memorize the average of each arrival-of-the-mail spacing of the data received by said receiving means, With a comparison means to compare arrival-of-the-mail spacing of the data received last time and the data received this time with the average of arrival-of-the-mail spacing memorized by said average storage means, and this comparison means If arrival-of-the-mail spacing of the data received last time and said received data detects that it is over the average of arrival-of-the-mail spacing memorized by said average storage means, it is characterized by having a deletion means to delete the number memorized by said storage means.
[0033] While a storage means memorizes with a number two or more data with which the number received by the receiving means was added according to the data sink of this invention according to claim 3, an average storage means memorizes the average of each arrival-of-the-mail spacing of the received data.
[0034] And when arrival-of-the-mail spacing of the data received last time and the data received this time is over the average of arrival-of-the-mail spacing memorized by the average storage means, a deletion means deletes the memorized number.
[0035] Therefore, the information of a number jump error [made / in according to non-received message data with a number / the mistake] by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0036] In this case, it sets to a data sink according to claim 3 like invention indicated to claim 4. With said comparison means, if arrival-of-the-mail spacing of the data received last time and the data received this time detects that it is over the average of arrival-of-the-mail spacing memorized by said average storage means You may make it equip said average-value storage means with a storage control means to make arrival-of-the-mail spacing of the data received last time and the data received this time memorize.
[0037] Moreover, you may make it have a transfer means to transmit the data from which the number was deleted by said deletion means to a storage means other than said storage means in invention of claims 1-4 like invention indicated to claim 5.
[0038] Furthermore, in invention of claims 1-5, it has further a directions means to direct deletion of said number, like invention indicated to claim 6, and if deletion of a number is directed for said deletion means by this directions means, you may make it delete said number memorized.
[0039]
[Embodiment of the Invention]
(Gestalt of the 1st invention) With reference to drawing, the gestalt of operation of this invention is hereafter explained to a detail.
[0040] Drawing 1 - drawing 15 are drawings showing the gestalt of operation of the 1st of the pager which applied the data sink of this invention.
[0041] First, a configuration is explained.
[0042] Drawing 1 is the external view of the pager 1 of the gestalt of this operation. It had the display 2 from which the pager 1 was constituted by that transverse plane by the dot-matrix type liquid crystal display panel in this drawing 1 , and that left lateral was equipped with the main switch 31 which serves as the electric power switch which carries out power-source ON/OFF by slide actuation, and the reset switch for deleting the message number of the message with a message number memorized by the push operation, and that right lateral is equipped with the loudspeaker 17 for carrying out singing information of the call. Moreover, in case the setting actuation in the selection key 33 and the various modes perform selection actuation in various modes, such as the waiting mode for arrival of the mail equipped with the memory key 32 which performs actuation which reads the message memorized in message memory to the transverse plane of a pager 1, and the pager 1, time-of-day setting mode, information sound setting mode, message creation mode, and message arrival mode with a

number, carries out, it has the set key 34 direct the decision of setting actuation.
[0043] The circuitry of this pager 1 interior is equipped with a display 2, the key input section 3, an antenna 4, a receive section 5, the receive-data-buffer circuit 6, CPU7, the address comparator circuit 8, the day interleave circuit 9, the BCH decoder 10, buffer memory 11, ID-ROM12, ROM13 and RAM14, the reset circuit 15, the driver 16, the loudspeaker 17, and the driver 21 as shown in the block diagram shown in drawing 2 .
[0044] A display 2 is the circuit section which consists of a liquid crystal panel, a display buffer, etc., drives by the driver 21, and displays information, such as a message, on a liquid crystal panel. The key input section 3 is constituted by the main switch 31 and memory key 32 which were shown in above-mentioned drawing 1 , the selection key 33, and the set key 34, and outputs the control signal accompanying each above-mentioned actuation to CPU7.
[0045] Moreover, a main switch 31 outputs a control signal to a reset circuit 15 through CPU7 later mentioned by carrying out a push operation.
[0046] An antenna 4 receives the radio signal transmitted from the transmitting base station which is not illustrated, and outputs it to a receive section 5. A receive section 5 does intermittent reception of the radio signal inputted from an antenna 4 by the control signal through CPU7 from the receive-data-buffer circuit 6, and after it does recovery detection, it outputs to the receive-data-buffer circuit 6.
[0047] CPU (Central Processing Unit)7 While analyzing the message data which received a message based on the various control programs stored in ROM13 According to the control signal inputted from the key input section 3, each circuit section in a pager 1 is controlled. the frame pattern data read from synchronizer 1 (S1)72A, and the data (cycle No. frame NO. --) read from frame information (FI)72B the count of multiple-times transmission, block information (BI)72D, and the data ((address-field AF) 72E --) read from vector field (VF)72F It has the buffer memory which stores the word length of the starting word number of the self message data in vector field (VF)72F and message (field MF) 72G, or message data and which is not illustrated.
[0048] In arrival-of-the-mail processing of the message data with a number in the arrival of the message data which contains and mentions circuit 7a later moreover, a time check for CPU7 to clock the waiting time of day for arrival of the mail to arrival of the mail -- The waiting receptacle time amount for arrival of the mail which shows arrival-of-the-mail spacing of arrival-of-the-mail time of day, and the last message data with a number and this message data with a number is clocked. The message data with a number in the incorporated message data is matched with arrival-of-the-mail time of day and the waiting receptacle time amount for arrival of the mail, and is stored in message data memory area 14with number b in RAM14. And the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is compared with the waiting receptacle time amount for arrival of the mail memorized in the past. when the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is the longest When the message number of the message data of arrival of the mail is flying last time the message number of the message data of arrival of the mail, and this time, The message number of all the messages with a message number that received a message by just before when elimination of a message number which received a message in the past was directed and press of a main switch 31 was detected is eliminated. It stores in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data, and returns to a reception standby condition.
[0049] The address comparator circuit 8 operates according to the data trigger outputted from CPU7, and is a circuit where the address data stored in the address field (AF) C 5 by which restoration processing was carried out carry out the comparison comparison of whether to be in agreement with the address data stored in ID-ROM12.
[0050] The day interleave circuit 9 is a circuit which separates for every phase and carries out restoration processing (interleave recovery) and which is outputted to Bus B according to the frame pattern data received by synchronizer (S1) 72A about the parallel data of one frame by which the sequential output was carried out from buffer memory 11.
[0051] Using the 10-bit BCH code and even number parity bit which are contained in 1 block data by which restoration processing was carried out in the day interleave circuit 9, the BCH

decoder 10 performs the error correction of this data, and outputs the error number of bits to CPU7.
[0052] Buffer memory 11 stores temporarily a maximum of one frame (interleave block section 73B) in a self-frame per block till arrival-of-the-mail processing termination.
[0053] As 21-bit address data set as the pager 1, ID-ROM12 is memory which stores individual information, such as 1 address-data #A of individual-calling ******, 2 address-data #B of individual-calling ******, address-data #C only for group calls, address-data #D only for message data with a number, and a frequency band of the radio signal which should receive, a phase, a self-frame, as shown in drawing 3 .
[0054] ROM (Read Only Memory)13 is the storage of a display-control program or the non-volatile which stores various programs etc. in addition to this.
[0055] RAM (Random Accesss Memory)14 is usual (message data memory area 14with number b which stores message data with [when the message data which received a message in address-data #A, #B, and #C is stored / which received a message in message data memory area 14a and address-data #D] a number is usually provided.), as shown in drawing 4 . The memory configuration in this message data memory area 14with number b is shown in drawing 5 . Within message data memory area 14with number b shown in drawing 5 , arrival-of-the-mail message data, its message number, arrival-of-the-mail time, arrival-of-the-mail time of day, and the waiting receptacle time amount for arrival of the mail are associated and stored in order of a storing memory number.
[0056] In the arrival-of-the-mail processing by the above CPU 7, a reset circuit 15 is a circuit which eliminates the message number memorized with the last arrival-of-the-mail message data in message data memory area 14with number b in RAM14, when the directions which the reset action by the push operation of a main switch 31 shown in above-mentioned drawing 1 is detected, and relate to reset processing from CPU7 are inputted. A loudspeaker 17 is driven by the driver 16 at the time of a call in, and in case a call in is reported, the alarm sound of it is carried out.
[0057] Next, the arrival-of-the-mail processing actuation in the gestalt of the 1st operation is explained.
[0058] Drawing 6 and 7 are the flow charts explaining arrival-of-the-mail processing of a pager 1.
[0059] First, CPU7 performs an initialization setup of each circuit section, and goes into a receiving standby mode while it will supply a power source to each circuit section combined with CPU7, if slide actuation of a main switch 31 detects powering on.
[0060] It goes into the frequency band which carried out initiation of operation according to this initialization setup, set up the control data of the receive-data-buffer circuit 6 corresponding to each frame pattern, and was set up by ID-ROM12, and the reception standby condition in a phase at this time. In the state of this reception standby, CPU7 performs intermittent reception for 1.875 seconds (one frame) thru/or for a maximum of 10 seconds for 2 minutes every 30 seconds until frame synchronization is detected by reception of synchronizer 1 (S1)72A of synchronizing signal section 73A. Then, frame synchronization detection by reception of synchronizer 1 (S1)72A until it passes the deadline of is performed.
[0061] And if frame synchronization detection is carried out, according to the control of the receive-data-buffer circuit 6 based on the data of synchronizing signal section 73A which received, a receive section 5 does an intermittent drive by the time slot of a self-frame, will detect an input signal, will get over, and will output to the receive-data-buffer circuit 6.
[0062] The receive-data-buffer circuit 6 rearranges into 8-bit parallel data the bit data of one frame which followed and were inputted by the receive section 5, and outputs them to Bus B. Then, CPU7 carries out sequential interleave recovery of the parallel data in buffer memory 11 by the day interleave 9 based on the frame pattern data of synchronizer (S1) 72A which received previously, performs error correction processing with the BCH decoder 11, and writes it in buffer memory 11 again while it has incorporated 8-bit parallel data of one frame one by one and stores them in buffer memory 11.
[0063] Then, either each address-data #A registered into ID-ROM12 shown in above-mentioned

drawing 3 , #B, #C and #D and the address data in (address-field AF) 72E stored in buffer memory 11 are compared, a coincidence signal is outputted in the case of coincidence, and reception actuation of a receive section 5 is made to continue to the receive-data-buffer circuit 6, at it so that all the data of this frame may be received (step S1).
[0064] Then, the address data which compared whether they were #A and #B by which the arrival-of-the-mail address data which were in agreement in (address-field AF) 72E of the incorporated data of one frame were registered into ID-ROM12 shown in above-mentioned drawing 3 , #C, or #D (address data only for message data with a number) (step S2), among these received a message distinguish whether it is address #D of a message with a number (step S3).
[0065] Arrival-of-the-mail address data are not #D. #A (1 address data of individual-calling ******), # When it is B (2 address data of individual-calling ******), or #C (address data only for group calls) Since it is the usual message data arrival, it stores in usual message data memory area 14a which showed this arrival-of-the-mail message data to above-mentioned drawing 4 in RAM14. While the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail, a display control is performed so that the message based on the arrival-of-the-mail message data may be displayed on a display 2 (step S17), and this processing is ended.
[0066] Moreover, when arrival-of-the-mail address data are #D (address data only for message data with a number) Arrival-of-the-mail time and arrival-of-the-mail time of day are clocked by section 7a (step S4). a time check -- Compute this arrival-of-the-mail time and the waiting receptacle time amount for arrival of the mail from the message data with a number which received a message last time from arrival-of-the-mail time of day (step S5), and with the message data with a number which received a message Arrival-of-the-mail time, arrival-of-the-mail time of day, and the waiting receptacle time amount for arrival of the mail are matched with the storing address at message data memory area 14with number b, and are stored in each column (step S6).
[0067] Then, the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number is compared with each waiting receptacle time amount for arrival of the mail corresponding to the message data with a number to the last time memorized by message data memory area 14with number b (step S7).
[0068] By this comparison, it sets to step S8. The waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number [longer than which waiting receptacle time amount for arrival of the mail corresponding to the message data with a number to last time] When the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number judges that it is the waiting receptacle time amount for the longest, namely, subsequently It checks whether the message number of the message data with a number which received a message this time, and the message number of the message data with a number which received a message last time are measured, and the message number is flying (step S9). When the message number of the message data of arrival of the mail is flying from arrival of the mail last time, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail this time, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.
[0069] However, the message number is flying, and since it is the waiting receptacle time amount for the longest, the message number may have taken a round, several message data with a number non-received a message existing before the message data with a number which received a message this time, and having not received a message further.
[0070] Therefore, in such a case, the message which urges a message number to inverse video and elimination of the message number of message data which it might indicate by flashing, and many messages might have received further, and received a message to last time with the display of a message is displayed (step S10).
[0071] Arrival-of-the-mail processing of the message data with a number in this step S10 shows the example of storing of message data memory area 14with number b to drawing 8 . the

message data with a number which carried out sequential arrival in the example of storing of this drawing 8 — it is, and the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from last time is the longest as compared with "4330 minutes" and the past waiting receptacle time amount for arrival of the mail, and the data storage condition in case a message number flies and is memorized further is shown.

[0072] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S10 is shown in drawing 9 . The example of a display shown in this drawing 9 shows the case where a reversal flashing indication of [06] is given as a message number "has been said previously" as a message. And several message data with a number non-received a message exist, and in order to show that the message number may have taken a round, having not received a message further, the contents which direct elimination of the message number "There is message possibility of much not receiving! Whether it resets" are displayed.

[0073] In this case, if the reset action by press of a main switch 31 is detected (step S11), the message data with which the message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b was eliminated, and the message number was eliminated further will usually be transmitted to message data memory area 14a (step S12), and arrival-of-the-mail processing will be ended. Moreover, actuation of a memory key 32, the selection key 33, or the set key 34 performs only reset of information.

[0074] Moreover, the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number is the waiting receptacle time amount for the longest, and when the message number of this arrival-of-the-mail message data and the message number of the last arrival-of-the-mail message are not flying by step S9, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail further, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.

[0075] However, from it being the waiting receptacle time amount for the longest, even if the message number is continuing, even if it is continuing seemingly, one cycle of message numbers may have taken a round with un-receiving a message.

[0076] Therefore, in such a case, the inverse video of the message number may be carried out with the display of a message, it may have one more or more cycle message received, and the message which stimulates elimination of the message number of message data which received a message to last time is displayed (step S13).

[0077] Arrival-of-the-mail processing of the message data with a number in this step S13 shows the example of storing of message data memory area 14with number b to drawing 10 . the message data with a number which carried out sequential arrival in the example of storing of this drawing 10 -- it is and the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from last time shows the data storage condition in the longest as compared with "4330 minutes" and the past waiting receptacle time amount for arrival of the mail.

[0078] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S13 is shown in drawing 11 . The example of a display shown in this drawing 11 shows the case where the inverse video of [05] is carried out as a message number "has been said previously" as a message. And in order to show that the message number may have taken a round with un-receiving a message, the contents which direct elimination of the message number "There is one or more cycle possibility of not receiving! Whether it resets" are displayed.

[0079] In this case, if the reset action by press of a main switch 31 is detected (step S11), the message data with which the message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b was eliminated, and the message number was eliminated further will usually be transmitted to message data memory area 14a (step S12), and arrival-of-the-mail processing will be ended. Moreover, actuation of a memory key 32, the selection key 33, or the set key 34 performs only reset of information.

[0080] In step S8, furthermore, one corresponding to the message data with a number to last

time of the waiting receptacle time amount for arrival of the mail [longer than the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number] When the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number judges that it is not the waiting receptacle time amount for the longest, namely, subsequently It checks whether the message number of the message data with a number which received a message this time, and the message number of the message data with a number which received a message last time are measured, and the message number is flying (step S14). When the message number of the message data of arrival of the mail is flying from arrival of the mail last time, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail this time, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.

[0081] However, there will be message data with a number non-received a message from the message number flying.

[0082] Therefore, in such a case, the message number is indicated by flashing with the display of a message, there is a non-received message with a number further, and the message which stimulates elimination of the message number of message data which received a message to last time is displayed (step S15).

[0083] Arrival-of-the-mail processing of the message data with a number in this step S15 shows the example of storing of message data memory area 14with number b to drawing 12 . the message data with a number which carried out sequential arrival in the example of storing of this drawing 12 -- it is and the data storage condition when the message number of the message data with a number of this time [message number / of the message data which received a message last time] in [04] serves as [06] and a number jump is shown.

[0084] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S15 is shown in drawing 13 . The example of a display shown in this drawing 13 shows the case where a flashing indication of [06] is given as a message number "has been said previously" as a message. And in order to show that there may be a message non-received a message, the contents which direct elimination of the message number "There is message possibility of not receiving! Whether it resets" are displayed.

[0085] In this case, if the reset action by press of a main switch 31 is detected (step S11), the message data with which the message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b was eliminated, and the message number was eliminated further will usually be transmitted to message data memory area 14a (step S12), and arrival-of-the-mail processing will be ended. Moreover, actuation of a memory key 32, the selection key 33, or the set key 34 performs only reset of information.

[0086] It sets to step S8 again. Furthermore, the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number Not the waiting receptacle time amount for the longest but the message number of message data with a number which received a message in step S14 this time further, When the message number of the message data with a number which received a message last time is continuing While the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2 (step S16), and arrival-of-the-mail processing is ended.

[0087] Arrival-of-the-mail processing of the message data with a number in this step S16 shows the example of storing of message data memory area 14with number b to drawing 14 . the message data with a number which carried out sequential arrival in the example of storing of this drawing 14 -- it is and the data storage condition when the message number of the message data with a number of this time [message number / of the message data which received a message last time] in [04] is following [05] is shown.

[0088] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S16 is shown in drawing 15 . The example of a display shown in this drawing 13 shows the case where [05] is displayed as a message number "has

been said previously" as a message.
[0089] as mentioned above, in the pager 1 of the gestalt of operation of **** 1 It corresponds to the message sequence number service which receives message data with a number. To the message data with a number, a message number, arrival-of-the-mail time, arrival-of-the-mail time of day, And it has message data memory area 14with number b stored also including the waiting receptacle time amount for arrival of the mail to this arrival from the last arrival in RAM14. In arrival-of-the-mail processing of message data with a number If the arrival of the address data for message data with a number is detected It stores in message data memory area 14with number b in RAM14. The waiting receptacle time amount for arrival of the mail memorized in the past when the message number of the message data which computed the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival, and received a message this time, and the message number of the message data which received a message last time were flying, The waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is compared.
[0090] And when it is judged that the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is the waiting receptacle time amount for the longest, CPU7 The message number of all the message data that received a message by last time when elimination of the message number of the arrival-of-the-mail message data to last time was directed and reset action was checked is eliminated. Since it was made to store in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data, In case the storage management of the data with which a number is added is received and carried out, the information of a number jump error to a meaningless non-received message can be lost by deleting the number of the message data with a number memorized in the past.
[0091] Moreover, in the pager which receives and carries out the storage management of the data with which a number is added, the information of a number jump error to the mistaken non-received message by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0092] In addition, although the waiting receptacle time interval for arrival of the mail was memorized for every arrival of message data with a number, the memory area which memorizes only waiting receptacle spacing for the longest arrival of the message data with a number which received a message in the past may be prepared in RAM14, and you may make it compare with waiting receptacle spacing for the maximum arrival which had this waiting receptacle spacing for arrival of the mail memorized with the gestalt of the 1st operation of a **** in the case of the arrival of message data with a number.
[0093] (Gestalt of the 2nd operation) Although it distinguished un-receiving [of one or more cycles] message data with the gestalt of the 1st operation by making only the die length of the waiting receptacle time amount for arrival of the mail into a criterion, it is possible by using the average of the past waiting receptacle time amount for arrival of the mail to also make it distinguish to un-receive [of one or more cycles].
[0094] Hereafter, with reference to drawing, the gestalt of operation of the 2nd of this invention is explained to a detail. In addition, the same drawing as the gestalt of the 1st operation is used, and the part of the same number omits the explanation.
[0095] Drawing 16 - drawing 18 are drawings showing the gestalt of operation of the 2nd of the pager which applied the data sink of this invention.
[0096] In the gestalt of the 2nd operation, CPU (Central Processing Unit)7 controls each circuit section in a pager 1 according to the control signal inputted from the key input section 3 while analyzing the message data which received a message based on the various control programs stored in ROM13. In arrival-of-the-mail processing of the message data with a number in the arrival of the message data which contains and mentions circuit 7a later moreover, the time check for clocking the waiting time of day for arrival of the mail to arrival of the mail -- The waiting receptacle time amount for arrival of the mail which shows arrival-of-the-mail spacing of arrival-of-the-mail time of day, and the last message data with a number and this message data with a number is clocked. The message data with a number in the incorporated message data is matched with arrival-of-the-mail time of day and the waiting receptacle time amount for arrival

of the mail, and is stored in message data memory area 14with number b in RAM14. And the average of the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival and the waiting receptacle time amount for arrival of the mail of the past stored in the average memory area in RAM14 is compared. when the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is over the average When the message number of the message data of arrival of the mail is flying last time the message number of the message data of arrival of the mail, and this time, The message number of all the messages with a message number that received a message by just before when elimination of a message number which received a message in the past was directed and press of a main switch 31 was detected is eliminated. It stores in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data, and returns to a reception standby condition.

[0097] RAM (Random Access Memory)14 possesses message data memory area 14with number b which stores the arrival message of a message data memory area 14a and with a number usually which stores the usual arrival-of-the-mail message as shown in drawing 16 , and average memory area 14c which memorizes the average of the waiting receptacle time amount for arrival of the mail of the message data with a number which received a message in the past.

[0098] Next, the arrival-of-the-mail processing actuation in the gestalt of the 2nd operation is explained.

[0099] Drawing 17 and 18 are the flow charts explaining arrival-of-the-mail processing of a pager 1.

[0100] First, CPU7 performs an initialization setup of each circuit section, and goes into a receiving standby mode while it will supply a power source to each circuit section combined with CPU7, if slide actuation of a main switch 31 detects powering on.

[0101] It goes into the frequency band which carried out initiation of operation according to this initialization setup, set up the control data of the receive-data-buffer circuit 6 corresponding to each frame pattern, and was set up by ID-ROM12, and the reception standby condition in a phase at this time. In the state of this reception standby, CPU7 performs intermittent reception for 1.875 seconds (one frame) thru/or for a maximum of 10 seconds for 2 minutes every 30 seconds until frame synchronization is detected by reception of synchronizer 1 (S1)72A of synchronizing signal section 73A. Then, frame synchronization detection by reception of synchronizer 1 (S1)72A until it passes the deadline of is performed.

[0102] And if frame synchronization detection is carried out, according to the control of the receive-data-buffer circuit 6 based on the data of synchronizing signal section 73A which received, a receive section 5 does an intermittent drive by the time slot of a self-frame, will detect an input signal, will get over, and will output to the receive-data-buffer circuit 6.

[0103] The receive-data-buffer circuit 6 rearranges into 8-bit parallel data the bit data of one frame which followed and were inputted by the receive section 5, and outputs them to Bus B. Then, CPU7 carries out sequential interleave recovery of the parallel data in buffer memory 11 by the day interleave 9 based on the frame pattern data of synchronizer (S1) 72A which received previously, performs error correction processing with the BCH decoder 11, and writes it in buffer memory 11 again while it has incorporated 8-bit parallel data of one frame one by one and stores them in buffer memory 11.

[0104] Then, either each address-data #A registered into ID-ROM12 shown in above-mentioned drawing 3 , #B, #C and #D and the address data in (address-field AF) 72E stored in buffer memory 11 are compared, a coincidence signal is outputted in the case of coincidence, and reception actuation of a receive section 5 is made to continue to the receive-data-buffer circuit 6, at it so that all the data of this frame may be received (step S21).

[0105] Then, the address data which compared whether they were #A and #B by which the arrival-of-the-mail address data which were in agreement in (address-field AF) 72E of the incorporated data of one frame were registered into ID-ROM12 shown in above-mentioned drawing 3 , #C, or #D (address data only for message data with a number) (step S22), among these received a message distinguish whether it is address #D of a message with a number (step S23).

[0106] Arrival-of-the-mail address data are not #D. #A (1 address data of individual-calling

******), # When it is B (2 address data of individual-calling ******), or #C (address data only for group calls) Since it is the usual message data arrival, it stores in usual message data memory area 14a which showed this arrival-of-the-mail message data to above-mentioned drawing 16 in RAM14. While the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail, a display control is performed so that the message based on the arrival-of-the-mail message data may be displayed on a display 2 (step S38), and this processing is ended.

[0107] Moreover, when arrival-of-the-mail address data are #D (address data only for message data with a number) Arrival-of-the-mail time and arrival-of-the-mail time of day are clocked by section 7a (step S24). a time check -- Compute this arrival-of-the-mail time and the waiting receptacle time amount for arrival of the mail from the message data with a number which received a message last time from arrival-of-the-mail time of day (step S25), and with the message data with a number which received a message Arrival-of-the-mail time, arrival-of-the-mail time of day, and the waiting receptacle time amount for arrival of the mail are matched with the storing address at message data memory area 14with number b, and are stored in each column (step S26).

[0108] Then, the average value of the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number and the waiting receptacle time amount for arrival of the mail of each message data with a number which received a message in the past memorized by average-value memory area 14c is compared (step S27).

[0109] It checks whether by this comparison, if it judges that the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number is over the average value of the waiting receptacle time amount for arrival of the mail of message data with a number in step S28, subsequently the message number of the message data with a number which received a message this time, and the message number of the message data with a number which received a message last time are measured, and the message number is flying (step S29). When the message number of the message data of arrival of the mail is flying from arrival of the mail last time, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail this time, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.

[0110] However, since the message number is flying and it is over the average value of the waiting receptacle time amount for arrival of the mail, the message number may have taken a round, several message data with a number non-received a message existing before the message data with a number which received a message this time, and having not received a message further.

[0111] Therefore, in such a case, the message which urges a message number to inverse video and elimination of the message number of message data which it might indicate by flashing, and many messages might have received further, and received a message to last time with the display of a message is displayed (step S30).

[0112] The example of storing of message data memory area 14with number b in arrival-of-the-mail processing of the message data with a number in this step S30 is the same as that of drawing 8 .

[0113] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S30 is as being shown in drawing 9 .

[0114] In this case, if the reset action by press of a main switch 31 is detected (step S31) The message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b is eliminated. Furthermore, the message data with which the message number was eliminated is usually transmitted to message data memory area 14a. The waiting receptacle time amount for arrival of the mail to arrival of the mail is set as average memory area 14c from arrival of the mail last time this time as the average of the waiting receptacle time amount for arrival of the mail (step S32), and arrival-of-the-mail processing is ended.

[0115] Moreover, if reset action by press of a main switch 31 is not detected but a memory key

32, the selection key 33, or the set key 34 is operated contrary to this, the average of the waiting receptacle time amount for arrival of the mail will be computed by performing only reset of information, and not eliminating a message number, but considering the waiting receptacle time amount for arrival of the mail with arrival of the mail last time arrival of the mail and this time, it will reset to average memory area 14c (step S33), and arrival-of-the-mail processing will be ended.

[0116] The waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number is over the average value of the waiting receptacle time amount for arrival of the mail, and when the message number of this arrival-of-the-mail message data and the message number of the last arrival-of-the-mail message are not flying at step S29, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail further, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.

[0117] However, from it being over the average value of the waiting receptacle time amount for arrival of the mail, even if the message number is continuing, even if it is continuing seemingly, one cycle of message numbers may have taken a round with un-receiving a message.

[0118] Therefore, in such a case, the inverse video of the message number may be carried out with the display of a message, it may have one more or more cycle message received, and the message which stimulates elimination of the message number of message data which received a message to last time is displayed (step S34).

[0119] It is as arrival-of-the-mail processing of the message data with a number in this step S34 showing the example of storing of message data memory area 14with number b to drawing 10 .

[0120] Moreover, it is the same as that of what shows the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S34 to drawing 11 .

[0121] In this case, if the reset action by press of a main switch 31 is detected (step S31) The message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b is eliminated. Furthermore, the message data with which the message number was eliminated is usually transmitted to message data memory area 14a. The waiting receptacle time amount for arrival of the mail to arrival of the mail is set as average memory area 14c from arrival of the mail last time this time as the average of the waiting receptacle time amount for arrival of the mail (step S32), and arrival-of-the-mail processing is ended.

[0122] Moreover, if reset action by press of a main switch 31 is not detected but a memory key 32, the selection key 33, or the set key 34 is operated contrary to this, the average of the waiting receptacle time amount for arrival of the mail will be computed by performing only reset of information, without eliminating a message number, and considering the waiting receptacle time amount for arrival of the mail with arrival of the mail last time arrival of the mail and this time, it will reset to average memory area 14c (step S33), and arrival-of-the-mail processing will be ended.

[0123] Furthermore, when it is judged that the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number does not exceed the average value of the waiting receptacle time amount for arrival of the mail in step S28, it checks whether subsequently the message number of the message data with a number which received a message this time, and the message number of the the message data with a number which received a message last time are measured, and the message number is flying (step S35).

[0124] And when the message number of the message data of arrival of the mail is flying from arrival of the mail last time, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail this time, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.

[0125] However, there will be message data with a number non-received a message from the message number flying.

[0126] Therefore, in such a case, the message number is indicated by flashing with the display of a message, there is a non-received message with a number further, and the message which

stimulates elimination of the message number of message data which received a message to last time is displayed (step S36).
[0127] It is as arrival-of-the-mail processing of the message data with a number in this step S36 showing the example of storing of message data memory area 14with number b to drawing 12 .
[0128] Moreover, it is the same as that of what shows the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S36 to drawing 13 .
[0129] In this case, if the reset action by press of a main switch 31 is detected (step S31) The message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b is eliminated. Furthermore, the message data with which the message number was eliminated is usually transmitted to message data memory area 14a. The waiting receptacle time amount for arrival of the mail to arrival of the mail is set as average memory area 14c from arrival of the mail last time this time as the average of the waiting receptacle time amount for arrival of the mail (step S32), and arrival-of-the-mail processing is ended.
[0130] Moreover, if reset action by press of a main switch 31 is not detected but a memory key 32, the selection key 33, or the set key 34 is operated contrary to this, the average of the waiting receptacle time amount for arrival of the mail will be computed by performing only reset of information, without eliminating a message number, and considering the waiting receptacle time amount for arrival of the mail with arrival of the mail last time arrival of the mail and this time, it will reset to average memory area 14c (step S33), and arrival-of-the-mail processing will be ended.
[0131] In step S28 the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number The message number of the message data with a number which did not exceed the average value of the waiting receptacle time amount for arrival of the mail, but received a message in step S35 this time further, When the message number of the message data with a number which received a message last time is continuing While the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail Display the message and message number based on the arrival-of-the-mail message data on a display 2 (step S37), and the waiting receptacle time amount for arrival of the mail with arrival of the mail is considered after that and last time arrival and this time. The average of the waiting receptacle time amount for arrival of the mail is computed, it resets to average memory area 14c (step S33), and arrival-of-the-mail processing is ended.
[0132] It is as arrival-of-the-mail processing of the message data with a number in this step S37 showing the example of storing of message data memory area 14with number b to drawing 14 .
[0133] Moreover, it is the same as that of what shows the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S37 to drawing 15 .
[0134] as mentioned above, in the pager 1 of the gestalt of operation of **** 2 It corresponds to the message sequence number service which receives message data with a number. To the message data with a number, a message number, arrival-of-the-mail time, arrival-of-the-mail time of day, And while having message data memory area 14with number b stored also including the waiting receptacle time amount for arrival of the mail to this arrival from the last arrival in RAM14 By making the average value of the past waiting receptacle time amount for arrival of the mail memorize, it sets to arrival-of-the-mail processing of message data with a number. If the arrival of the address data for message data with a number is detected It stores in message data memory area 14with number b in RAM14, the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is computed, and the average of the waiting receptacle time amount for arrival of the mail is compared with the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival.
[0135] and CPU7, when the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is over the waiting receptacle time amount for the longest When the message number of the message data of arrival of the mail is flying last time the message number of the message data of arrival of the mail, and this time The message number of all the message data that received a message by last time when elimination of the message number of

the arrival-of-the-mail message data to last time was directed and reset action was checked is eliminated. Since it was made to store in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data, In case the storage management of the data with which a number is added is received and carried out, the information of a number jump error to the message data with a number which is not received [unnecessary] can be lost by deleting the number of the message data with a number memorized in the past.
[0136] Moreover, the information of a number jump error [made / in according to non-received message data with a number / the mistake] by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0137] In addition, although the message number of all the messages that received a message to last time is eliminated and it was made to store in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data with the gestalt of each above-mentioned implementation Since the inside of a pager 1 is in the condition that all messages with a number are storable supposing it performs a message-retransmission demand in this condition, By having all message data with a number resent from a paging pin center,large, it is possible to store all message data with a number.
[0138] Moreover, although the message number stored in message data memory area 14with number b was eliminated in arrival-of-the-mail processing of the gestalt of each above-mentioned operation after displaying the message which stimulates the actuation which eliminates storing of a message number and detecting the reset action by the push operation of a main switch 31, it is good also as processing which makes the reset action unnecessary and eliminates a message number automatically.
[0139] Then, the discontinuity storing condition of a message number can be canceled without making a user conscious, it can return to a reception standby condition, and the actuation burden of a user when the discontinuity storing condition which is a message number occurs can be omitted.
[0140] In the gestalt of the 2nd operation, the calculation approach of the average value of the waiting receptacle time amount for arrival of the mail sums up the past waiting receptacle time amount for arrival of the mail, and although the approach of being what subtracted 1 and breaking from the number of the message data stored is common, further again The average of the waiting receptacle time amount for arrival of the mail with arrival of the mail may be added to the average of the waiting receptacle time amount for arrival of the mail stored not only in this but in average memory area 14c last time arrival of the mail and this time, and you may reset what was divided by 2 as the average of the new waiting receptacle time amount for arrival of the mail.
[0141] And the average of the waiting receptacle time amount for arrival of the mail may be computed serially, and may be made to update from several latest arrival-of-the-mail message data.
[0142]
[Effect of the Invention] In case the storage management of the data with which a number is added is received and carried out according to the data sink of invention according to claim 1, the information of a number jump error to a meaningless non-received message can be lost by deleting the number of the message data with a number memorized in the past.
[0143] According to the data sink of invention according to claim 2, in the pager which receives and carries out the storage management of the data with which a number is added, the information of a number jump error to the mistaken non-received message by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0144] According to the data sink of invention according to claim 3, in the pager which receives and carries out the storage management of the data with which a number is added, the information of a number jump error to the mistaken non-received message by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0145] According to the data sink of invention according to claim 4, when waiting receptacle spacing for arrival of the mail concerning reception of this message data is over the average of the waiting receptacle time amount for arrival of the mail in addition to invention according to

claim 3, the waiting receptacle time amount for arrival of the mail to this arrival from the last arrival can be overwritten as the average of the waiting receptacle time amount for arrival of the mail.

[0146] Since the message data which eliminated the message number to either to claims 1-4 in addition to invention of a publication is transmitted to the memory of the usual message data according to the data sink of invention according to claim 5, the increment in the unnecessary data in the memory area of message data with a number can be prevented, and it becomes easy to carry out the storage management of message data.

[0147] Since an elimination check is once demanded from the user of a pager on the occasion of number elimination of the message data with a number which was memorized in the past to either to claims 1-5 in addition to invention of a publication according to the data sink of invention according to claim 6, elimination of an unprepared number can be prevented.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the data sink which receives the data with which the number was added.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] As communication system which sends and receives the text which used the conventional telephone line, there are a wireless paging system, a home banking system, etc. And there is a POCSAG method as a transmitting data format in a wireless paging system.

[0003] However, with development of mobile communication technology in recent years, price reduction of a service use tariff, not only a business youth but a personal youth, and as a result of spread in the younger age group progressing especially, service subscribers increase in number and offer of sufficient service is difficult.

[0004] Thus, the altitude paging system which also needed to make service altitude, consequently was specified by the standard "RCR STD-43" is introduced with the increment in need with recently [rapid], or the escape of a function.

[0005] First, this advanced paging system is explained briefly. The transmit data configuration adopted as this advanced paging system is shown in drawing 19 . In drawing 19 , the data configuration to which 70 is transmitted in 1 hour, and 71 show a cycle configuration, and 72 shows the frame structure of one frame. The data configuration 70 consists of 15 cycles to which the numbers from "0" to "14" were attached, and this shows the cycle transmitted in 1 hour. The cycle configuration 71 consists of 128 frames to which the numbers from "0" to "127" were attached, and this shows the frame number transmitted in 4 minutes. One frame is 1.875 seconds and data of 42 frames are transmitted in 1 minute. The frame structure 72 is classified into eight according to the contents of data in the data for one frame.

[0006] The above-mentioned frame structure 72 consists of synchronizer 1(S1) 72A, frame information (FI)72B, synchronizer 2 (S2)72C, block information bureau (BI)72D, (address-field AF) 72E, vector field (VF)72F, message (field MF) 72G, and idle block (IB)72H.

[0007] The modulation technique and transmission speed of data which synchronizer 1 (S1)72A consists of 1600bps 112 bits by which the binary FSK modulation was carried out, and are transmitted henceforth [block information (BI)] are the convention information which specifies any a binary FSK method / 1600bps binary FSK method / 3200bps4 value FSK method / 3200bps4 value FSK method / of the 6400bps they are.

[0008] Frame information (FI)72B consists of 1600bps WORD [32-bit] by which the binary FSK modulation was carried out, and the information which specifies the frame number of this frame and this cycle number, and a multiple-times transmitting display and its count of transmission is stored. Synchronizer 2 (S2)72C is the timing information for taking receiving timing with the modulation technique and transmission speed which were specified by synchronizer 1 (S1)72A.

[0009] Each field of 72D-72G and idle block (IB)72H are information transmitted at the modulation technique and receiving rate which were specified by the above-mentioned synchronizer 1 (S1)72A, and consist of 11 1-block data transmitted per 160ms. Block information bureau (BI)72D is a block which stores information used as the below-mentioned (address-field AF) 72E and the origin of vector field (VF)72F, such as a WORD number and numbers of words, and (address-field AF) 72E is the field which stores the address which is the recognition number of the paging point. Vector field (VF)72F are the field which stores information which serves as the nothing below-mentioned origin of message (field MF) 72G in the

above-mentioned address field and a pair, such as a WORD number and numbers of words, and message (field MF) 72G are the field which stores the message data according to the gestalt of the data specified by vector field (VF)72F. And idle block (IB)72H are an intact block, and the pattern of "1" or "0" is set here.
[0010] In a block configuration 73 furthermore, to synchronizing signal section 73A 3 blocks of synchronizer 1(S1) 72A, frame information (F1) 72B, and synchronizer 2 (S2)72C are set. To interleave block section (#0-#10) 73B The WORD data of two or more (a maximum of four) phases were interleaved. Each block of block information bureau (BI)72D, (address-field AF) 72E, vector field (VF)72F, message (field MF) 72G, and idle block (IB)72H is set.
[0011] The user using the pager corresponding to this advanced paging system can receive various information messages from various information offer firms, when basic services and these additional services can be chosen, and it can contract per address, for example, a contract of the above-mentioned data utility is made.
[0012] In this advanced paging system, there is the thing "message sequence number service" and "message retransmission service" besides fundamental paging service as one of the services offered using the above data configuration.
[0013] This for every address of a paging receiver (henceforth a pager) While adding the message number according to individual to message data, transmitting to it from a pin center,large side facility within message (field MF) 72G to the pager of the call-in point and making a subscriber recognize the transmitting sequence of message data The storage management of the message data which the pin center,large side also transmitted in the past by this message number is carried out for every address. If the message data with which the message number is flying by the pager side should be received By reporting that there is non-received message data, the resending demand of message data is performed by notifying the message number corresponding to non-received message data to a pin center,large.
[0014] Moreover, reception of this message data that carried out the resending demand calls off non-received information.
[0015] If it explains to a detail, in the above "message sequence number service" and "message retransmission service", a pin center,large side will transmit a message by the 1-block word configuration of message (field MF) 72G corresponding to "message sequence number service" illustrated to drawing 20 .
[0016] In this drawing, K expresses a message checksum. N is message number data division and the cyclic data from 0 to 63 are stored by 5 bits.
[0017] Moreover, R is a message retrieval flag and, as for this R, 1 is always set by the data of the message field corresponding to "message sequence number service." And S is bit data which specify whether a format of this message is displayed in a special format.
[0018] And corresponding to this data, a pin center,large side transmits the message data which added the message number which continued from No. 0 to No. 63 corresponding to the address of the pager a contract of was made, matches this transmitted message data with a message number, and carries out storing management at the existing database.
[0019] Moreover, the gestalt of a message set as the object of this message sequence number service is specified by vector field (VF)72F, and the figure message with a number, the hexadecimal / binary message corresponding to the message of kanji kana mixture, and the alphabetic-character message correspond.

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EFFECT OF THE INVENTION

[Effect of the Invention] In case the storage management of the data with which a number is added is received and carried out according to the data sink of invention according to claim 1, the information of a number jump error to a meaningless non-received message can be lost by deleting the number of the message data with a number memorized in the past.
[0143] According to the data sink of invention according to claim 2, in the pager which receives and carries out the storage management of the data with which a number is added, the information of a number jump error to the mistaken non-received message by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0144] According to the data sink of invention according to claim 3, in the pager which receives and carries out the storage management of the data with which a number is added, the information of a number jump error to the mistaken non-received message by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0145] According to the data sink of invention according to claim 4, when waiting receptacle spacing for arrival of the mail concerning reception of this message data is over the average of the waiting receptacle time amount for arrival of the mail in addition to invention according to claim 3, the waiting receptacle time amount for arrival of the mail to this arrival from the last arrival can be overwritten as the average of the waiting receptacle time amount for arrival of the mail.
[0146] Since the message data which eliminated the message number to either to claims 1-4 in addition to invention of a publication is transmitted to the memory of the usual message data according to the data sink of invention according to claim 5, the increment in the unnecessary data in the memory area of message data with a number can be prevented, and it becomes easy to carry out the storage management of message data.
[0147] Since an elimination check is once demanded from the user of a pager on the occasion of number elimination of the message data with a number which was memorized in the past to either to claims 1-5 in addition to invention of a publication according to the data sink of invention according to claim 6, elimination of an unprepared number can be prevented.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, the next trouble had occurred in this "message sequence number service" and "message retransmission service."
[0021] Information notifies the message number corresponding to non-received message data for non-received message data being in a 1 and pager side to a pin center,large, and since it is canceled only in the message data which is not received [this] receiving a message, even if business does not have non-received message data, if it does not carry out a resending demand, it cannot reset information.
[0022] Although a 2 and pin center,large side carries out individual management of the message data with which the message number was added by this message number In order to address the 64th message data as a message of the message number of No. 0 and to manage it, ** Although all the message data with a number transmitted in the meantime are set as the object of resending when there is a long duration contractor outside arrival-of-the-mail area, when the contractor has returned to arrival-of-the-mail area, if the message number is flying more than a round, only some non-received message data will be made applicable to resending.
[0023] ** When a contractor returns to arrival-of-the-mail area, a round is taken exactly and there is arrival of message data with a number, the number jump error generated before this message is not reported.
[0024] therefore, data sinks, such as a **-jar which this invention takes an example by such trouble, and it receives, and it carries out the storage management of the message data with a message number, and reports a message number jump, -- it is offering the data sink which improves the use environment in the message data reception with a number as is, enables deletion of a message number about the message with a message number which carried out the storage management and it not only reports the error of a message number jump, but stimulates deletion actuation of a number.

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MEANS

[Means for Solving the Problem] A receiving means by which invention according to claim 1 receives the data with which the number was added, A storage means to memorize with a number the data received by this receiving means, It is characterized by having a comparison means to compare the number received by said receiving means with the newest number memorized by said storage means, and a deletion means to delete the number memorized by said storage means if it detects that both numbers are not continuing with this comparison means.
[0026] If it detects that both the numbers that the comparison means compared the number added to each of the data received by the receiving means and the data received last time, and were compared are not continuing according to the data sink of this invention according to claim 1, a deletion means will delete the number memorized by the storage means.
[0027] Therefore, in case the storage management of the data with which a number is added is received and carried out, the message number jump information by the message data with a number which is not received [unnecessary] can be lost by deleting the number of the message data with a message number (it is hereafter indicated as message data with a number) memorized in the past.
[0028] Moreover, a receiving means by which invention according to claim 2 receives the data with which the number was added, A storage means to memorize with a number two or more data received by this receiving means, An arrival-of-the-mail spacing storage means to memorize arrival-of-the-mail spacing of the data received by said receiving means, With a comparison means to compare arrival-of-the-mail spacing memorized by arrival-of-the-mail spacing of the data received last time and the data received this time, and said arrival-of-the-mail spacing storage means, and this comparison means If arrival-of-the-mail spacing of the data received last time and the data received this time detects that it is over arrival-of-the-mail spacing memorized by said arrival-of-the-mail spacing storage means, it is characterized by having a deletion means to delete the number memorized by said storage means.
[0029] While a storage means memorizes with a number two or more data with which the number received by the receiving means was added according to the data sink of this invention according to claim 2, an arrival-of-the-mail spacing storage means memorizes the greatest arrival-of-the-mail spacing of the received data.
[0030] And when arrival-of-the-mail spacing of the data received last time and the data received this time is over arrival-of-the-mail spacing memorized by the arrival-of-the-mail spacing storage means, a deletion means deletes the memorized number.
[0031] Therefore, the information of a number jump error [made / in according to non-received message data with a number / the mistake] by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0032] Furthermore, a receiving means by which invention according to claim 3 receives the data with which the number was added, A storage means to memorize with a number two or more data received by this receiving means, An average storage means to memorize the average of each arrival-of-the-mail spacing of the data received by said receiving means, With a comparison means to compare arrival-of-the-mail spacing of the data received last time and the data received this time with the average of arrival-of-the-mail spacing memorized by said

average storage means, and this comparison means If arrival-of-the-mail spacing of the data received last time and said received data detects that it is over the average of arrival-of-the-mail spacing memorized by said average storage means, it is characterized by having a deletion means to delete the number memorized by said storage means.
[0033] While a storage means memorizes with a number two or more data with which the number received by the receiving means was added according to the data sink of this invention according to claim 3, an average storage means memorizes the average of each arrival-of-the-mail spacing of the received data.
[0034] And when arrival-of-the-mail spacing of the data received last time and the data received this time is over the average of arrival-of-the-mail spacing memorized by the average storage means, a deletion means deletes the memorized number.
[0035] Therefore, the information of a number jump error [made / in according to non-received message data with a number / the mistake] by having been outside arrival-of-the-mail area for a long period of time can be lost.
[0036] In this case, it sets to a data sink according to claim 3 like invention indicated to claim 4. With said comparison means, if arrival-of-the-mail spacing of the data received last time and the data received this time detects that it is over the average of arrival-of-the-mail spacing memorized by said average storage means You may make it equip said average-value storage means with a storage control means to make arrival-of-the-mail spacing of the data received last time and the data received this time memorize.
[0037] Moreover, you may make it have a transfer means to transmit the data from which the number was deleted by said deletion means to a storage means other than said storage means in invention of claims 1-4 like invention indicated to claim 5.
[0038] Furthermore, in invention of claims 1-5, it has further a directions means to direct deletion of said number, like invention indicated to claim 6, and if deletion of a number is directed for said deletion means by this directions means, you may make it delete said number memorized.
[0039]
[Embodiment of the Invention]
(Gestalt of the 1st invention) With reference to drawing, the gestalt of operation of this invention is hereafter explained to a detail.
[0040] Drawing 1 - drawing 15 are drawings showing the gestalt of operation of the 1st of the pager which applied the data sink of this invention.
[0041] First, a configuration is explained.
[0042] Drawing 1 is the external view of the pager 1 of the gestalt of this operation. It had the display 2 from which the pager 1 was constituted by that transverse plane by the dot-matrix type liquid crystal display panel in this drawing 1 , and that left lateral was equipped with the main switch 31 which serves as the electric power switch which carries out power-source ON/OFF by slide actuation, and the reset switch for deleting the message number of the message with a message number memorized by the push operation, and that right lateral is equipped with the loudspeaker 17 for carrying out singing information of the call. Moreover, in case the setting actuation in the selection key 33 and the various modes perform selection actuation in various modes, such as the waiting mode for arrival of the mail equipped with the memory key 32 which performs actuation which reads the message memorized in message memory to the transverse plane of a pager 1, and the pager 1, time-of-day setting mode, information sound setting mode, message creation mode, and message arrival mode with a number, carries out, it has the set key 34 direct the decision of setting actuation.
[0043] The circuitry of this pager 1 interior is equipped with a display 2, the key input section 3, an antenna 4, a receive section 5, the receive-data-buffer circuit 6, CPU7, the address comparator circuit 8, the day interleave circuit 9, the BCH decoder 10, buffer memory 11, ID-ROM12, ROM13 and RAM14, the reset circuit 15, the driver 16, the loudspeaker 17, and the driver 21 as shown in the block diagram shown in drawing 2 .
[0044] A display 2 is the circuit section which consists of a liquid crystal panel, a display buffer, etc., drives by the driver 21, and displays information, such as a message, on a liquid crystal

panel. The key input section 3 is constituted by the main switch 31 and memory key 32 which were shown in above-mentioned drawing 1 , the selection key 33, and the set key 34, and outputs the control signal accompanying each above-mentioned actuation to CPU7.
[0045] Moreover, a main switch 31 outputs a control signal to a reset circuit 15 through CPU7 later mentioned by carrying out a push operation.
[0046] An antenna 4 receives the radio signal transmitted from the transmitting base station which is not illustrated, and outputs it to a receive section 5. A receive section 5 does intermittent reception of the radio signal inputted from an antenna 4 by the control signal through CPU7 from the receive-data-buffer circuit 6, and after it does recovery detection, it outputs to the receive-data-buffer circuit 6.
[0047] CPU (Central Processing Unit)7 While analyzing the message data which received a message based on the various control programs stored in ROM13 According to the control signal inputted from the key input section 3, each circuit section in a pager 1 is controlled. the frame pattern data read from synchronizer 1 (S1)72A, and the data (cycle No. frame NO. --) read from frame information (FI)72B the count of multiple-times transmission, block information (BI)72D, and the data ((address-field AF) 72E --) read from vector field (VF)72F It has the buffer memory which stores the word length of the starting word number of the self message data in vector field (VF)72F and message (field MF) 72G, or message data and which is not illustrated.
[0048] In arrival-of-the-mail processing of the message data with a number in the arrival of the message data which contains and mentions circuit 7a later moreover, a time check for CPU7 to clock the waiting time of day for arrival of the mail to arrival of the mail -- The waiting receptacle time amount for arrival of the mail which shows arrival-of-the-mail spacing of arrival-of-the-mail time of day, and the last message data with a number and this message data with a number is clocked. The message data with a number in the incorporated message data is matched with arrival-of-the-mail time of day and the waiting receptacle time amount for arrival of the mail, and is stored in message data memory area 14with number b in RAM14. And the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is compared with the waiting receptacle time amount for arrival of the mail memorized in the past. when the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is the longest When the message number of the message data of arrival of the mail is flying last time the message number of the message data of arrival of the mail, and this time, The message number of all the messages with a message number that received a message by just before when elimination of a message number which received a message in the past was directed and press of a main switch 31 was detected is eliminated. It stores in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data, and returns to a reception standby condition.
[0049] The address comparator circuit 8 operates according to the data trigger outputted from CPU7, and is a circuit where the address data stored in the address field (AF) C 5 by which restoration processing was carried out carry out the comparison comparison of whether to be in agreement with the address data stored in ID-ROM12.
[0050] The day interleave circuit 9 is a circuit which separates for every phase and carries out restoration processing (interleave recovery) and which is outputted to Bus B according to the frame pattern data received by synchronizer (S1) 72A about the parallel data of one frame by which the sequential output was carried out from buffer memory 11.
[0051] Using the 10-bit BCH code and even number parity bit which are contained in 1 block data by which restoration processing was carried out in the day interleave circuit 9, the BCH decoder 10 performs the error correction of this data, and outputs the error number of bits to CPU7.
[0052] Buffer memory 11 stores temporarily a maximum of one frame (interleave block section 73B) in a self-frame per block till arrival-of-the-mail processing termination.
[0053] As 21-bit address data set as the pager 1, ID-ROM12 is memory which stores individual information, such as 1 address-data #A of individual-calling ******, 2 address-data #B of individual-calling ******, address-data #C only for group calls, address-data #D only for message data with a number, and a frequency band of the radio signal which should receive, a

phase, a self-frame, as shown in drawing 3 .
[0054] ROM (Read Only Memory)13 is the storage of a display-control program or the non-volatile which stores various programs etc. in addition to this.
[0055] RAM (Random Accesss Memory)14 is usual (message data memory area 14with number b which stores message data with [when the message data which received a message in address-data #A, #B, and #C is stored / which received a message in message data memory area 14a and address-data #D] a number is usually provided.), as shown in drawing 4 . The memory configuration in this message data memory area 14with number b is shown in drawing 5 . Within message data memory area 14with number b shown in drawing 5 , arrival-of-the-mail message data, its message number, arrival-of-the-mail time, arrival-of-the-mail time of day, and the waiting receptacle time amount for arrival of the mail are associated and stored in order of a storing memory number.
[0056] In the arrival-of-the-mail processing by the above CPU 7, a reset circuit 15 is a circuit which eliminates the message number memorized with the last arrival-of-the-mail message data in message data memory area 14with number b in RAM14, when the directions which the reset action by the push operation of a main switch 31 shown in above-mentioned drawing 1 is detected, and relate to reset processing from CPU7 are inputted. A loudspeaker 17 is driven by the driver 16 at the time of a call in, and in case a call in is reported, the alarm sound of it is carried out.
[0057] Next, the arrival-of-the-mail processing actuation in the gestalt of the 1st operation is explained.
[0058] Drawing 6 and 7 are the flow charts explaining arrival-of-the-mail processing of a pager 1.
[0059] First, CPU7 performs an initialization setup of each circuit section, and goes into a receiving standby mode while it will supply a power source to each circuit section combined with CPU7, if slide actuation of a main switch 31 detects powering on.
[0060] It goes into the frequency band which carried out initiation of operation according to this initialization setup, set up the control data of the receive-data-buffer circuit 6 corresponding to each frame pattern, and was set up by ID-ROM12, and the reception standby condition in a phase at this time. In the state of this reception standby, CPU7 performs intermittent reception for 1.875 seconds (one frame) thru/or for a maximum of 10 seconds for 2 minutes every 30 seconds until frame synchronization is detected by reception of synchronizer 1 (S1)72A of synchronizing signal section 73A. Then, frame synchronization detection by reception of synchronizer 1 (S1)72A until it passes the deadline of is performed.
[0061] And if frame synchronization detection is carried out, according to the control of the receive-data-buffer circuit 6 based on the data of synchronizing signal section 73A which received, a receive section 5 does an intermittent drive by the time slot of a self-frame, will detect an input signal, will get over, and will output to the receive-data-buffer circuit 6.
[0062] The receive-data-buffer circuit 6 rearranges into 8-bit parallel data the bit data of one frame which followed and were inputted by the receive section 5, and outputs them to Bus B. Then, CPU7 carries out sequential interleave recovery of the parallel data in buffer memory 11 by the day interleave 9 based on the frame pattern data of synchronizer (S1) 72A which received previously, performs error correction processing with the BCH decoder 11, and writes it in buffer memory 11 again while it has incorporated 8-bit parallel data of one frame one by one and stores them in buffer memory 11.
[0063] Then, either each address-data #A registered into ID-ROM12 shown in above-mentioned drawing 3 , #B, #C and #D and the address data in (address-field AF) 72E stored in buffer memory 11 are compared, a coincidence signal is outputted in the case of coincidence, and reception actuation of a receive section 5 is made to continue to the receive-data-buffer circuit 6, at it so that all the data of this frame may be received (step S1).
[0064] Then, the address data which compared whether they were #A and #B by which the arrival-of-the-mail address data which were in agreement in (address-field AF) 72E of the incorporated data of one frame were registered into ID-ROM12 shown in above-mentioned drawing 3 , #C, or #D (address data only for message data with a number) (step S2), among

these received a message distinguish whether it is address #D of a message with a number (step S3).
[0065] Arrival-of-the-mail address data are not #D. #A (1 address data of individual-calling ******), # When it is B (2 address data of individual-calling ******), or #C (address data only for group calls) Since it is the usual message data arrival, it stores in usual message data memory area 14a which showed this arrival-of-the-mail message data to above-mentioned drawing 4 in RAM14. While the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail, a display control is performed so that the message based on the arrival-of-the-mail message data may be displayed on a display 2 (step S17), and this processing is ended.
[0066] Moreover, when arrival-of-the-mail address data are #D (address data only for message data with a number) Arrival-of-the-mail time and arrival-of-the-mail time of day are clocked by section 7a (step S4). a time check -- Compute this arrival-of-the-mail time and the waiting receptacle time amount for arrival of the mail from the message data with a number which received a message last time from arrival-of-the-mail time of day (step S5), and with the message data with a number which received a message Arrival-of-the-mail time, arrival-of-the-mail time of day, and the waiting receptacle time amount for arrival of the mail are matched with the storing address at message data memory area 14with number b, and are stored in each column (step S6).
[0067] Then, the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number is compared with each waiting receptacle time amount for arrival of the mail corresponding to the message data with a number to the last time memorized by message data memory area 14with number b (step S7).
[0068] By this comparison, it sets to step S8. The waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number [longer than which waiting receptacle time amount for arrival of the mail corresponding to the message data with a number to last time] When the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number judges that it is the waiting receptacle time amount for the longest, namely, subsequently It checks whether the message number of the message data with a number which received a message this time, and the message number of the message data with a number which received a message last time are measured, and the message number is flying (step S9). When the message number of the message data of arrival of the mail is flying from arrival of the mail last time, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail this time, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.
[0069] However, the message number is flying, and since it is the waiting receptacle time amount for the longest, the message number may have taken a round, several message data with a number non-received a message existing before the message data with a number which received a message this time, and having not received a message further.
[0070] Therefore, in such a case, the message which urges a message number to inverse video and elimination of the message number of message data which it might indicate by flashing, and many messages might have received further, and received a message to last time with the display of a message is displayed (step S10).
[0071] Arrival-of-the-mail processing of the message data with a number in this step S10 shows the example of storing of message data memory area 14with number b to drawing 8 . the message data with a number which carried out sequential arrival in the example of storing of this drawing 8 -- it is, and the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from last time is the longest as compared with "4330 minutes" and the past waiting receptacle time amount for arrival of the mail, and the data storage condition in case a message number flies and is memorized further is shown.
[0072] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S10 is shown in drawing 9 . The example of a display shown in this drawing 9 shows the case where a reversal flashing indication of [06] is given as a

message number "has been said previously" as a message. And several message data with a number non-received a message exist, and in order to show that the message number may have taken a round, having not received a message further, the contents which direct elimination of the message number "There is message possibility of much not receiving! Whether it resets" are displayed.
[0073] In this case, if the reset action by press of a main switch 31 is detected (step S11), the message data with which the message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b was eliminated, and the message number was eliminated further will usually be transmitted to message data memory area 14a (step S12), and arrival-of-the-mail processing will be ended. Moreover, actuation of a memory key 32, the selection key 33, or the set key 34 performs only reset of information.
[0074] Moreover, the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number is the waiting receptacle time amount for the longest, and when the message number of this arrival-of-the-mail message data and the message number of the last arrival-of-the-mail message are not flying by step S9, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail further, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.
[0075] However, from it being the waiting receptacle time amount for the longest, even if the message number is continuing, even if it is continuing seemingly, one cycle of message numbers may have taken a round with un-receiving a message.
[0076] Therefore, in such a case, the inverse video of the message number may be carried out with the display of a message, it may have one more or more cycle message received, and the message which stimulates elimination of the message number of message data which received a message to last time is displayed (step S13).
[0077] Arrival-of-the-mail processing of the message data with a number in this step S13 shows the example of storing of message data memory area 14with number b to drawing 10 . the message data with a number which carried out sequential arrival in the example of storing of this drawing 10 -- it is and the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from last time shows the data storage condition in the longest as compared with "4330 minutes" and the past waiting receptacle time amount for arrival of the mail.
[0078] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S13 is shown in drawing 11 . The example of a display shown in this drawing 11 shows the case where the inverse video of [05] is carried out as a message number "has been said previously" as a message. And in order to show that the message number may have taken a round with un-receiving a message, the contents which direct elimination of the message number "There is one or more cycle possibility of not receiving! Whether it resets" are displayed.
[0079] In this case, if the reset action by press of a main switch 31 is detected (step S11), the message data with which the message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b was eliminated, and the message number was eliminated further will usually be transmitted to message data memory area 14a (step S12), and arrival-of-the-mail processing will be ended. Moreover, actuation of a memory key 32, the selection key 33, or the set key 34 performs only reset of information.
[0080] In step S8, furthermore, one corresponding to the message data with a number to last time of the waiting receptacle time amount for arrival of the mail [longer than the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number] When the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number judges that it is not the waiting receptacle time amount for the longest, namely, subsequently It checks whether the message number of the message data with a number which received a message this time, and the message number of the message data with a number which received a message last time are measured, and the message

number is flying (step S14). When the message number of the message data of arrival of the mail is flying from arrival of the mail last time, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail this time, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.
[0081] However, there will be message data with a number non-received a message from the message number flying.
[0082] Therefore, in such a case, the message number is indicated by flashing with the display of a message, there is a non-received message with a number further, and the message which stimulates elimination of the message number of message data which received a message to last time is displayed (step S15).
[0083] Arrival-of-the-mail processing of the message data with a number in this step S15 shows the example of storing of message data memory area 14with number b to drawing 12 . the message data with a number which carried out sequential arrival in the example of storing of this drawing 12 -- it is and the data storage condition when the message number of the message data with a number of this time [message number / of the message data which received a message last time] in [04] serves as [06] and a number jump is shown.
[0084] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S15 is shown in drawing 13 . The example of a display shown in this drawing 13 shows the case where a flashing indication of [06] is given as a message number "has been said previously" as a message. And in order to show that there may be a message non-received a message, the contents which direct elimination of the message number "There is message possibility of not receiving! Whether it resets" are displayed.
[0085] In this case, if the reset action by press of a main switch 31 is detected (step S11), the message data with which the message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b was eliminated, and the message number was eliminated further will usually be transmitted to message data memory area 14a (step S12), and arrival-of-the-mail processing will be ended. Moreover, actuation of a memory key 32, the selection key 33, or the set key 34 performs only reset of information.
[0086] It sets to step S8 again. Furthermore, the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number Not the waiting receptacle time amount for the longest but the message number of message data with a number which received a message in step S14 this time further, When the message number of the message data with a number which received a message last time is continuing While the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2 (step S16), and arrival-of-the-mail processing is ended.
[0087] Arrival-of-the-mail processing of the message data with a number in this step S16 shows the example of storing of message data memory area 14with number b to drawing 14 . the message data with a number which carried out sequential arrival in the example of storing of this drawing 14 -- it is and the data storage condition when the message number of the message data with a number of this time [message number / of the message data which received a message last time] in [04] is following [05] is shown.
[0088] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S16 is shown in drawing 15 . The example of a display shown in this drawing 13 shows the case where [05] is displayed as a message number "has been said previously" as a message.
[0089] as mentioned above, in the pager 1 of the gestalt of operation of **** 1 It corresponds to the message sequence number service which receives message data with a number. To the message data with a number, a message number, arrival-of-the-mail time, arrival-of-the-mail time of day, And it has message data memory area 14with number b stored also including the waiting receptacle time amount for arrival of the mail to this arrival from the last arrival in RAM14. In arrival-of-the-mail processing of message data with a number If the arrival of the address data for message data with a number is detected It stores in message data memory area

14with number b in RAM14. The waiting receptacle time amount for arrival of the mail memorized in the past when the message number of the message data which computed the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival, and received a message this time, and the message number of the message data which received a message last time were flying, The waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is compared.

[0090] And when it is judged that the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is the waiting receptacle time amount for the longest, CPU7 The message number of all the message data that received a message by last time when elimination of the message number of the arrival-of-the-mail message data to last time was directed and reset action was checked is eliminated. Since it was made to store in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data, In case the storage management of the data with which a number is added is received and carried out, the information of a number jump error to a meaningless non-received message can be lost by deleting the number of the message data with a number memorized in the past.

[0091] Moreover, in the pager which receives and carries out the storage management of the data with which a number is added, the information of a number jump error to the mistaken non-received message by having been outside arrival-of-the-mail area for a long period of time can be lost.

[0092] In addition, although the waiting receptacle time interval for arrival of the mail was memorized for every arrival of message data with a number, the memory area which memorizes only waiting receptacle spacing for the longest arrival of the message data with a number which received a message in the past may be prepared in RAM14, and you may make it compare with waiting receptacle spacing for the maximum arrival which had this waiting receptacle spacing for arrival of the mail memorized with the gestalt of the 1st operation of a **** in the case of the arrival of message data with a number.

[0093] (Gestalt of the 2nd operation) Although it distinguished un-receiving [of one or more cycles] message data with the gestalt of the 1st operation by making only the die length of the waiting receptacle time amount for arrival of the mail into a criterion, it is possible by using the average of the past waiting receptacle time amount for arrival of the mail to also make it distinguish to un-receive [of one or more cycles].

[0094] Hereafter, with reference to drawing, the gestalt of operation of the 2nd of this invention is explained to a detail. In addition, the same drawing as the gestalt of the 1st operation is used, and the part of the same number omits the explanation.

[0095] Drawing 16 - drawing 18 are drawings showing the gestalt of operation of the 2nd of the pager which applied the data sink of this invention.

[0096] In the gestalt of the 2nd operation, CPU (Central Processing Unit)7 controls each circuit section in a pager 1 according to the control signal inputted from the key input section 3 while analyzing the message data which received a message based on the various control programs stored in ROM13. In arrival-of-the-mail processing of the message data with a number in the arrival of the message data which contains and mentions circuit 7a later moreover, the time check for clocking the waiting time of day for arrival of the mail to arrival of the mail -- The waiting receptacle time amount for arrival of the mail which shows arrival-of-the-mail spacing of arrival-of-the-mail time of day, and the last message data with a number and this message data with a number is clocked. The message data with a number in the incorporated message data is matched with arrival-of-the-mail time of day and the waiting receptacle time amount for arrival of the mail, and is stored in message data memory area 14with number b in RAM14. And the average of the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival and the waiting receptacle time amount for arrival of the mail of the past stored in the average memory area in RAM14 is compared. when the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is over the average When the message number of the message data of arrival of the mail is flying last time the message number of the message data of arrival of the mail, and this time, The message number of all the messages with a message number that received a message by just before when elimination of a message

number which received a message in the past was directed and press of a main switch 31 was detected is eliminated. It stores in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data, and returns to a reception standby condition.
[0097] RAM (Random Access Memory)14 possesses message data memory area 14with number b which stores the arrival message of a message data memory area 14a and with a number usually which stores the usual arrival-of-the-mail message as shown in drawing 16 , and average memory area 14c which memorizes the average of the waiting receptacle time amount for arrival of the mail of the message data with a number which received a message in the past.
[0098] Next, the arrival-of-the-mail processing actuation in the gestalt of the 2nd operation is explained.
[0099] Drawing 17 and 18 are the flow charts explaining arrival-of-the-mail processing of a pager 1.
[0100] First, CPU7 performs an initialization setup of each circuit section, and goes into a receiving standby mode while it will supply a power source to each circuit section combined with CPU7, if slide actuation of a main switch 31 detects powering on.
[0101] It goes into the frequency band which carried out initiation of operation according to this initialization setup, set up the control data of the receive-data-buffer circuit 6 corresponding to each frame pattern, and was set up by ID-ROM12, and the reception standby condition in a phase at this time. In the state of this reception standby, CPU7 performs intermittent reception for 1.875 seconds (one frame) thru/or for a maximum of 10 seconds for 2 minutes every 30 seconds until frame synchronization is detected by reception of synchronizer 1 (S1)72A of synchronizing signal section 73A. Then, frame synchronization detection by reception of synchronizer 1 (S1)72A until it passes the deadline of is performed.
[0102] And if frame synchronization detection is carried out, according to the control of the receive-data-buffer circuit 6 based on the data of synchronizing signal section 73A which received, a receive section 5 does an intermittent drive by the time slot of a self-frame, will detect an input signal, will get over, and will output to the receive-data-buffer circuit 6.
[0103] The receive-data-buffer circuit 6 rearranges into 8-bit parallel data the bit data of one frame which followed and were inputted by the receive section 5, and outputs them to Bus B. Then, CPU7 carries out sequential interleave recovery of the parallel data in buffer memory 11 by the day interleave 9 based on the frame pattern data of synchronizer (S1) 72A which received previously, performs error correction processing with the BCH decoder 11, and writes it in buffer memory 11 again while it has incorporated 8-bit parallel data of one frame one by one and stores them in buffer memory 11.
[0104] Then, either each address-data #A registered into ID-ROM12 shown in above-mentioned drawing 3 , #B, #C and #D and the address data in (address-field AF) 72E stored in buffer memory 11 are compared, a coincidence signal is outputted in the case of coincidence, and reception actuation of a receive section 5 is made to continue to the receive-data-buffer circuit 6, at it so that all the data of this frame may be received (step S21).
[0105] Then, the address data which compared whether they were #A and #B by which the arrival-of-the-mail address data which were in agreement in (address-field AF) 72E of the incorporated data of one frame were registered into ID-ROM12 shown in above-mentioned drawing 3 , #C, or #D (address data only for message data with a number) (step S22), among these received a message distinguish whether it is address #D of a message with a number (step S23).
[0106] Arrival-of-the-mail address data are not #D. #A (1 address data of individual-calling ******), # When it is B (2 address data of individual-calling ******), or #C (address data only for group calls) Since it is the usual message data arrival, it stores in usual message data memory area 14a which showed this arrival-of-the-mail message data to above-mentioned drawing 16 in RAM14. While the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail, a display control is performed so that the message based on the arrival-of-the-mail message data may be displayed on a display 2 (step S38), and this processing is ended.
[0107] Moreover, when arrival-of-the-mail address data are #D (address data only for message data with a number) Arrival-of-the-mail time and arrival-of-the-mail time of day are clocked by

section 7a (step S24). a time check — Compute this arrival-of-the-mail time and the waiting receptacle time amount for arrival of the mail from the message data with a number which received a message last time from arrival-of-the-mail time of day (step S25), and with the message data with a number which received a message Arrival-of-the-mail time, arrival-of-the-mail time of day, and the waiting receptacle time amount for arrival of the mail are matched with the storing address at message data memory area 14with number b, and are stored in each column (step S26).

[0108] Then, the average value of the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number and the waiting receptacle time amount for arrival of the mail of each message data with a number which received a message in the past memorized by average-value memory area 14c is compared (step S27).

[0109] It checks whether by this comparison, if it judges that the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number is over the average value of the waiting receptacle time amount for arrival of the mail of message data with a number in step S28, subsequently the message number of the message data with a number which received a message this time, and the message number of the message data with a number which received a message last time are measured, and the message number is flying (step S29). When the message number of the message data of arrival of the mail is flying from arrival of the mail last time, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail this time, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.

[0110] However, since the message number is flying and it is over the average value of the waiting receptacle time amount for arrival of the mail, the message number may have taken a round, several message data with a number non-received a message existing before the message data with a number which received a message this time, and having not received a message further.

[0111] Therefore, in such a case, the message which urges a message number to inverse video and elimination of the message number of message data which it might indicate by flashing, and many messages might have received further, and received a message to last time with the display of a message is displayed (step S30).

[0112] The example of storing of message data memory area 14with number b in arrival-of-the-mail processing of the message data with a number in this step S30 is the same as that of drawing 8 .

[0113] Moreover, the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S30 is as being shown in drawing 9 .

[0114] In this case, if the reset action by press of a main switch 31 is detected (step S31) The message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b is eliminated. Furthermore, the message data with which the message number was eliminated is usually transmitted to message data memory area 14a. The waiting receptacle time amount for arrival of the mail to arrival of the mail is set as average memory area 14c from arrival of the mail last time this time as the average of the waiting receptacle time amount for arrival of the mail (step S32), and arrival-of-the-mail processing is ended.

[0115] Moreover, if reset action by press of a main switch 31 is not detected but a memory key 32, the selection key 33, or the set key 34 is operated contrary to this, the average of the waiting receptacle time amount for arrival of the mail will be computed by performing only reset of information, and not eliminating a message number, but considering the waiting receptacle time amount for arrival of the mail with arrival of the mail last time arrival of the mail and this time, it will reset to average memory area 14c (step S33), and arrival-of-the-mail processing will be ended.

[0116] The waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number is over the average

value of the waiting receptacle time amount for arrival of the mail, and when the message number of this arrival-of-the-mail message data and the message number of the last arrival-of-the-mail message are not flying at step S29, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail further, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.
[0117] However, from it being over the average value of the waiting receptacle time amount for arrival of the mail, even if the message number is continuing, even if it is continuing seemingly, one cycle of message numbers may have taken a round with un-receiving a message.
[0118] Therefore, in such a case, the inverse video of the message number may be carried out with the display of a message, it may have one more or more cycle message received, and the message which stimulates elimination of the message number of message data which received a message to last time is displayed (step S34).
[0119] It is as arrival-of-the-mail processing of the message data with a number in this step S34 showing the example of storing of message data memory area 14with number b to drawing 10 .
[0120] Moreover, it is the same as that of what shows the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S34 to drawing 11 .
[0121] In this case, if the reset action by press of a main switch 31 is detected (step S31) The message number memorized with the message data with a number to the last time memorized by message data memory area 14with number b is eliminated. Furthermore, the message data with which the message number was eliminated is usually transmitted to message data memory area 14a. The waiting receptacle time amount for arrival of the mail to arrival of the mail is set as average memory area 14c from arrival of the mail last time this time as the average of the waiting receptacle time amount for arrival of the mail (step S32), and arrival-of-the-mail processing is ended.
[0122] Moreover, if reset action by press of a main switch 31 is not detected but a memory key 32, the selection key 33, or the set key 34 is operated contrary to this, the average of the waiting receptacle time amount for arrival of the mail will be computed by performing only reset of information, without eliminating a message number, and considering the waiting receptacle time amount for arrival of the mail with arrival of the mail last time arrival of the mail and this time, it will reset to average memory area 14c (step S33), and arrival-of-the-mail processing will be ended.
[0123] Furthermore, when it is judged that the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number does not exceed the average value of the waiting receptacle time amount for arrival of the mail in step S28, it checks whether subsequently the message number of the message data with a number which received a message this time, and the message number of the message data with a number which received a message last time are measured, and the message number is flying (step S35).
[0124] And when the message number of the message data of arrival of the mail is flying from arrival of the mail last time, while the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail this time, the message and message number based on the arrival-of-the-mail message data are displayed on a display 2.
[0125] However, there will be message data with a number non-received a message from the message number flying.
[0126] Therefore, in such a case, the message number is indicated by flashing with the display of a message, there is a non-received message with a number further, and the message which stimulates elimination of the message number of message data which received a message to last time is displayed (step S36).
[0127] It is as arrival-of-the-mail processing of the message data with a number in this step S36 showing the example of storing of message data memory area 14with number b to drawing 12 .
[0128] Moreover, it is the same as that of what shows the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S36 to drawing 13 .
[0129] In this case, if the reset action by press of a main switch 31 is detected (step S31) The message number memorized with the message data with a number to the last time memorized by

message data memory area 14with number b is eliminated. Furthermore, the message data with which the message number was eliminated is usually transmitted to message data memory area 14a. The waiting receptacle time amount for arrival of the mail to arrival of the mail is set as average memory area 14c from arrival of the mail last time this time as the average of the waiting receptacle time amount for arrival of the mail (step S32), and arrival-of-the-mail processing is ended.

[0130] Moreover, if reset action by press of a main switch 31 is not detected but a memory key 32, the selection key 33, or the set key 34 is operated contrary to this, the average of the waiting receptacle time amount for arrival of the mail will be computed by performing only reset of information, without eliminating a message number, and considering the waiting receptacle time amount for arrival of the mail with arrival of the mail last time arrival of the mail and this time, it will reset to average memory area 14c (step S33), and arrival-of-the-mail processing will be ended.

[0131] In step S28 the waiting receptacle time amount for arrival of the mail to the arrival of this message data with a number from the arrival of the last message data with a number The message number of the message data with a number which did not exceed the average value of the waiting receptacle time amount for arrival of the mail, but received a message in step S35 this time further, When the message number of the message data with a number which received a message last time is continuing While the information sound of the loudspeaker 17 driven by the driver 16 reports arrival of the mail Display the message and message number based on the arrival-of-the-mail message data on a display 2 (step S37), and the waiting receptacle time amount for arrival of the mail with arrival of the mail is considered after that and last time arrival and this time. The average of the waiting receptacle time amount for arrival of the mail is computed, it resets to average memory area 14c (step S33), and arrival-of-the-mail processing is ended.

[0132] It is as arrival-of-the-mail processing of the message data with a number in this step S37 showing the example of storing of message data memory area 14with number b to drawing 14 .

[0133] Moreover, it is the same as that of what shows the example of a display of a display 2 by arrival-of-the-mail processing of the message data with a number in step S37 to drawing 15 .

[0134] as mentioned above, in the pager 1 of the gestalt of operation of **** 2 It corresponds to the message sequence number service which receives message data with a number. To the message data with a number, a message number, arrival-of-the-mail time, arrival-of-the-mail time of day, And while having message data memory area 14with number b stored also including the waiting receptacle time amount for arrival of the mail to this arrival from the last arrival in RAM14 By making the average value of the past waiting receptacle time amount for arrival of the mail memorize, it sets to arrival-of-the-mail processing of message data with a number. If the arrival of the address data for message data with a number is detected It stores in message data memory area 14with number b in RAM14, the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is computed, and the average of the waiting receptacle time amount for arrival of the mail is compared with the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival.

[0135] and CPU7, when the waiting receptacle time amount for arrival of the mail to the last arrival and this arrival is over the waiting receptacle time amount for the longest When the message number of the message data of arrival of the mail is flying last time the message number of the message data of arrival of the mail, and this time The message number of all the message data that received a message by last time when elimination of the message number of the arrival-of-the-mail message data to last time was directed and reset action was checked is eliminated. Since it was made to store in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data, In case the storage management of the data with which a number is added is received and carried out, the information of a number jump error to the message data with a number which is not received [unnecessary] can be lost by deleting the number of the message data with a number memorized in the past.

[0136] Moreover, the information of a number jump error [made / in according to non-received message data with a number / the mistake] by having been outside arrival-of-the-mail area for

a long period of time can be lost.
[0137] In addition, although the message number of all the messages that received a message to last time is eliminated and it was made to store in usual message data memory area 14a in RAM14 as usual arrival-of-the-mail message data with the gestalt of each above-mentioned implementation Since the inside of a pager 1 is in the condition that all messages with a number are storable supposing it performs a message-retransmission demand in this condition, By having all message data with a number resent from a paging pin center,large, it is possible to store all message data with a number.
[0138] Moreover, although the message number stored in message data memory area 14with number b was eliminated in arrival-of-the-mail processing of the gestalt of each above-mentioned operation after displaying the message which stimulates the actuation which eliminates storing of a message number and detecting the reset action by the push operation of a main switch 31, it is good also as processing which makes the reset action unnecessary and eliminates a message number automatically.
[0139] Then, the discontinuity storing condition of a message number can be canceled without making a user conscious, it can return to a reception standby condition, and the actuation burden of a user when the discontinuity storing condition which is a message number occurs can be omitted.
[0140] In the gestalt of the 2nd operation, the calculation approach of the average value of the waiting receptacle time amount for arrival of the mail sums up the past waiting receptacle time amount for arrival of the mail, and although the approach of being what subtracted 1 and breaking from the number of the message data stored is common, further again The average of the waiting receptacle time amount for arrival of the mail with arrival of the mail may be added to the average of the waiting receptacle time amount for arrival of the mail stored not only in this but in average memory area 14c last time arrival of the mail and this time, and you may reset what was divided by 2 as the average of the new waiting receptacle time amount for arrival of the mail.
[0141] And the average of the waiting receptacle time amount for arrival of the mail may be computed serially, and may be made to update from several latest arrival-of-the-mail message data.

[Translation done.]

* NOTICES *

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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The external view of the pager 1 of the gestalt of the 1 operation which applied the data sink of this invention.
[Drawing 2] The block diagram showing the circuitry in the pager 1 of drawing 1 .
[Drawing 3] Drawing showing the memory configuration in ID-ROM12 of drawing 2 .
[Drawing 4] Drawing showing the memory configuration in RAM14 of drawing 2 .
[Drawing 5] Drawing showing the memory configuration in message data memory area 14with number b of drawing 4 .
[Drawing 6] The flow chart explaining the arrival-of-the-mail processing in the pager 1 of drawing 2 .
[Drawing 7] The flow chart explaining the arrival-of-the-mail processing in the pager 1 of drawing 2 .
[Drawing 8] Drawing showing the example of data stored in message data memory area 14with number b by arrival-of-the-mail processing of the message data with a number in step S10 of drawing 7 .
[Drawing 9] Drawing showing the example of a display of the message with a number displayed on the display 2 by arrival-of-the-mail processing of the message data with a number in step S10 of drawing 7 .
[Drawing 10] Drawing showing the example of data stored in message data memory area 14with number b by arrival-of-the-mail processing of the message data with a number in step S13 of drawing 7 .
[Drawing 11] Drawing showing the example of a display of the message with a number displayed on the display 2 by arrival-of-the-mail processing of the message data with a number in step S13 of drawing 7 .
[Drawing 12] Drawing showing the example of data stored in message data memory area 14with number b by arrival-of-the-mail processing of the message data with a number in step S15 of drawing 7 .
[Drawing 13] Drawing showing the example of a display of the message with a number displayed on the display 2 by arrival-of-the-mail processing of the message data with a number in step S15 of drawing 7 .
[Drawing 14] Drawing showing the example of data stored in message data memory area 14with number b by arrival-of-the-mail processing of the message data with a number in step S16 of drawing 7 .
[Drawing 15] Drawing showing the example of a display of the message with a number displayed on the display 2 by arrival-of-the-mail processing of the message data with a number in step S16 of drawing 7 .
[Drawing 16] Drawing showing the memory configuration in RAM14 of drawing 2 in the gestalt of the 2nd operation.
[Drawing 17] The flow chart explaining the arrival-of-the-mail processing in the pager 1 of drawing 2 in the gestalt of the 2nd operation.
[Drawing 18] The flow chart explaining the arrival-of-the-mail processing in the pager 1 of

drawing 2 in the gestalt of the 2nd operation.
[Drawing 19] Drawing showing the data configuration specified by the standard "RCR STD-43" which is an advanced paging system.
[Drawing 20] The schematic diagram showing the 1-block word configuration of message (field MF) 72G in a standard "RCR STD-43."
[Description of Notations]
1 Pager
2 Display
3 Key Input Section
4 Antenna
5 Receive Section
6 Receive-Data-Buffer Circuit
7 CPU
8 Address Comparator Circuit
9 Day Interleave Circuit
10 BCH Decoder
11 Buffer Memory
12 ID-ROM
13 ROM
14 RAM
14a Usually, a message data memory area
14b A message data memory area with a number
15 Reset Circuit
16 Driver
17 Loudspeaker
31 Main Switch
32 Memory Key
33 Selection Key
34 Set Key

[Translation done.]

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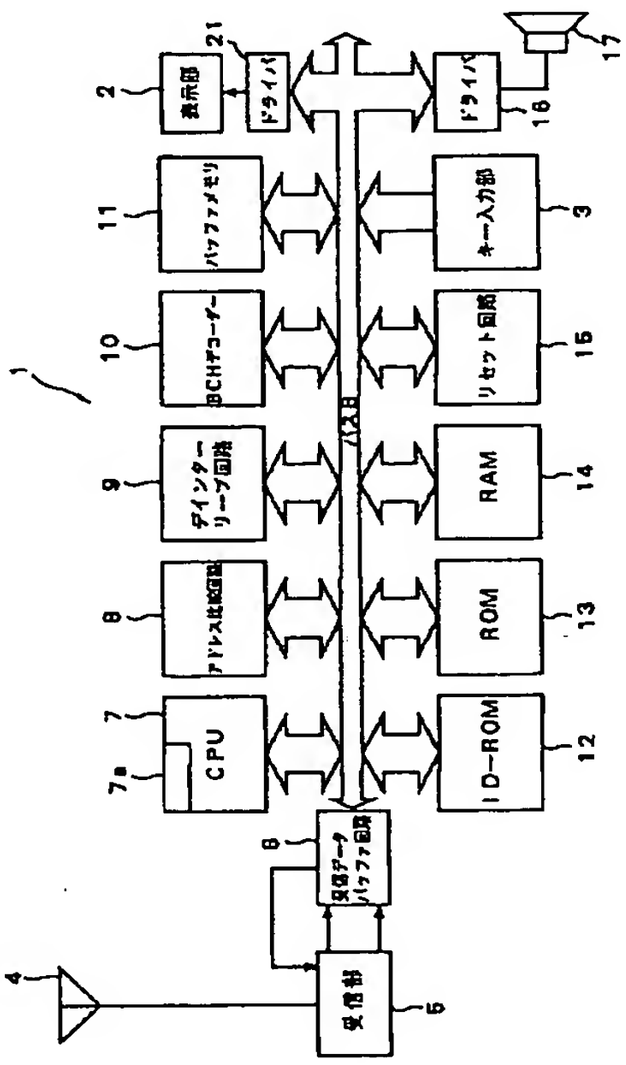
(54)【発明の名称】　データ受信装置

(57)【要約】

【課題】　メッセージ通番サービスに対応するページャーにおいて、メッセージ番号飛びを判断するためのメッセージ番号を削除可能とし、また１巡以上の番号飛びエラーを報知し、メッセージ番号の削除操作を促して、メッセージ通番サービスの利用環境を改善することである。

【解決手段】　ＣＰＵ７は、番号付きメッセージを検出すると番号付きメッセージデータメモリエリア１４ｂに格納し、前回の着信から今回の着信までの着信待ち受け時間と、過去の着信待ち受け時間とを比較し、前回の着信から今回の着信までの着信待ち受け時間が最長であるか、メッセージ番号飛びを検出すると前回まで記憶したメッセージデータのメッセージ番号の消去を指示し、リセット操作を確認すると前回まで着信した全メッセージのメッセージ番号を消去する。



【特許請求の範囲】
【請求項１】番号が付加されたデータを受信する受信手段と、
この受信手段により受信されたデータを、番号と共に記憶する記憶手段と、
前記受信手段によって受信された番号と、前記記憶手段に記憶される最新の番号とを比較する比較手段と、
この比較手段により両番号が連続していないことを検出すると、前記記憶手段に記憶された番号を削除する削除手段と、
を備えたことを特徴とするデータ受信装置。
【請求項２】番号が付加されたデータを受信する受信手段と、
この受信手段により受信されたデータを番号と共に複数記憶する記憶手段と、
前記受信手段によって受信されたデータの着信間隔を記憶する着信間隔記憶手段と、
前回受信されたデータと今回受信されたデータとの着信間隔と、前記着信間隔記憶手段に記憶されている着信間隔とを比較する比較手段と、
この比較手段により、前回受信されたデータと今回受信されたデータとの着信間隔が、前記着信間隔記憶手段に記憶されている着信間隔を越えていることを検出すると、前記記憶手段に記憶されている番号を削除する削除手段と、
を備えたことを特徴とするデータ受信装置。
【請求項３】番号が付加されたデータを受信する受信手段と、
この受信手段により受信されたデータを番号と共に複数記憶する記憶手段と、
前記受信手段によって受信されたデータのそれぞれの着信間隔の平均値を記憶する平均値記憶手段と、
前回受信されたデータと今回受信されたデータとの着信間隔と、前記平均値記憶手段に記憶されている着信間隔の平均値とを比較する比較手段と、
この比較手段により、前回受信されたデータと前記受信されたデータの着信間隔が、前記平均値記憶手段に記憶される着信間隔の平均値を越えていることを検出すると、前記記憶手段に記憶されている番号を削除する削除手段と、
を備えたことを特徴とするデータ受信装置。
【請求項４】前記比較手段により、前回受信されたデータと今回受信されたデータとの着信間隔が、前記平均値記憶手段に記憶される着信間隔の平均値を越えていることを検出すると、前記平均値記憶手段に前回受信されたデータと今回受信されたデータとの着信間隔を記憶させる記憶制御手段を、更に備えたことを特徴とする請求項３記載のデータ受信装置。
【請求項５】前記削除手段により番号が削除されたデータを、前記記憶手段とは別の記憶手段に転送する転送手段を更に備えたことを特徴とする請求項１から４のいずれかに記載のデータ受信装置。

【請求項６】前記番号の削除を指示する指示手段を更に備え、
前記削除手段は、この指示手段により番号の削除を指示されると、前記記憶されている番号を削除することを特徴とする請求項１から５のいずれかに記載のデータ受信装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、番号が付加されたデータを受信するデータ受信装置に関する。
【０００２】
【従来の技術】従来の電話回線を使用した文字情報の送受を行う通信システムとしては、無線ページングシステムやホームバンキングシステムなどがある。そして、無線ページングシステムにおける送信データフォーマットとしては、ＰＯＣＳＡＧ方式がある。
【０００３】しかしながら、近年の移動体通信技術の発達に伴ってサービス利用料金の値下げや、ビジネスユースのみならずパーソナルユース、特に、若年層への普及が進んだ結果、サービス加入者が増加して、十分なサービスの提供が困難になっている。
【０００４】このように、最近の急激な需要の増加や機能の拡張に伴って、サービスも高度にする必要があり、その結果、標準規格「ＲＣＲ　ＳＴＤ－４３」で規定された高度ページング方式の導入されている。
【０００５】まず、この高度ページング方式について簡単に説明する。この高度ページング方式に採用される送信データ構成を図１９に示す。図１９において、７０は１時間に送信されるデータ構成、７１はサイクル構成、そして、７２は１フレームのフレーム構成を示している。データ構成７０は、“０”から“１４”までの番号が付けられた１５サイクルよりなり、これは１時間に送信されるサイクルを示す。サイクル構成７１は、“０”から“１２７”までの番号が付けられた１２８フレームよりなり、これは４分間に送信されるフレーム数を示す。１フレームは１．８７５秒であり、１分間に４２フレームのデータが送信される。フレーム構成７２は、１フレーム分のデータをそのデータ内容に応じて８つに区分されている。
【０００６】上記フレーム構成７２は、同期部１（Ｓ１）７２Ａ、フレーム情報（ＦＩ）７２Ｂ、同期部２（Ｓ２）７２Ｃ、ブロック情報部（ＢＩ）７２Ｄ、アドレスフィールド（ＡＦ）７２Ｅ、ベクトルフィールド（ＶＦ）７２Ｆ、メッセージフィールド（ＭＦ）７２Ｇ、及びアイドルブロック（ＩＢ）７２Ｈより構成されている。
【０００７】同期部１（Ｓ１）７２Ａは、２値ＦＳＫ変調された１６００ｂｐｓの１１２ビットから構成され、

ブロック情報（ＢＩ）以降で送信されるデータの変調方式及び伝送速度が、
２値ＦＳＫ方式／１６００ｂｐｓ
２値ＦＳＫ方式／３２００ｂｐｓ
４値ＦＳＫ方式／３２００ｂｐｓ
４値ＦＳＫ方式／６４００ｂｐｓ
の内の何れであるかを規定する規定情報である。

【０００８】フレーム情報（ＦＩ）７２Ｂは、２値ＦＳＫ変調された１６００ｂｐｓの３２ビットのワードから構成され、本フレームのフレーム番号、及び本サイクル番号、複数回送信表示やその送信回数を規定する情報が格納されている。同期部２（Ｓ２）７２Ｃは、同期部１（Ｓ１）７２Ａで規定された変調方式や伝送速度で受信タイミングをとるためのタイミング情報である。

【０００９】７２Ｄ～７２Ｇの各フィールド及びアイドルブロック（ＩＢ）７２Ｈは、上記同期部１（Ｓ１）７２Ａで規定された変調方式及び受信速度で送信される情報であり、１６０ｍｓ単位で送信される１ブロックのデータ１１個で構成される。ブロック情報部（ＢＩ）７２Ｄは、後述のアドレスフィールド（ＡＦ）７２Ｅ及びベクトルフィールド（ＶＦ）７２Ｆの起点となるワード番号やワード数等の情報を格納するブロックであり、アドレスフィールド（ＡＦ）７２Ｅは、ページング先の認識番号であるアドレスを格納するフィールドである。ベクトルフィールド（ＶＦ）７２Ｆは、前述のアドレスフィールドと対をなし後述のメッセージフィールド（ＭＦ）７２Ｇの起点となるワード番号、ワード数等の情報を格納するフィールドであり、メッセージフィールド（ＭＦ）７２Ｇは、ベクトルフィールド（ＶＦ）７２Ｆで規定されたデータの形態に応じたメッセージデータを格納するフィールドである。そして、アイドルブロック（ＩＢ）７２Ｈは、未使用ブロックであり、ここには“１”又は“０”のパターンがセットされる。

【００１０】さらに、ブロック構成７３において、同期信号部７３Ａには、同期部１（Ｓ１）７２Ａ、フレーム情報（Ｆ１）７２Ｂ、同期部２（Ｓ２）７２Ｃの３ブロックがセットされ、インターリーブブロック部（＃０～＃１０）７３Ｂには、複数（最大４つ）フェーズのワードデータがインターリーブされた、ブロック情報部（ＢＩ）７２Ｄ、アドレスフィールド（ＡＦ）７２Ｅ、ベクトルフィールド（ＶＦ）７２Ｆ、メッセージフィールド（ＭＦ）７２Ｇ及びアイドルブロック（ＩＢ）７２Ｈの各ブロックがセットされる。

【００１１】この高度ページング方式に対応するページャーを利用するユーザーは、基本サービスと付加的なこれらのサービスを選択してアドレス単位で契約することができ、例えば、上記情報サービスを契約した場合は、種々の情報提供会社から種々の情報メッセージを受信することができる。

【００１２】この高度ページング方式では、以上のデータ構成を利用して提供されるサービスの一つとして、基本的なページングサービスの他に、「メッセージ通番サービス」及び「メッセージ再送サービス」というものがある。

【００１３】これは、ページング受信機（以下、ページャーという）のアドレス毎に、センター側設備から着呼先のページャーに対してメッセージフィールド（ＭＦ）７２Ｇ内でメッセージデータに個別のメッセージ番号を付加して送信し、加入者にメッセージデータの送信順序を認識させるとともに、センター側でもこのメッセージ番号で過去に送信したメッセージデータをアドレス毎に記憶管理し、万一、ページャー側でメッセージ番号が飛んでいるメッセージデータを受信した場合は、未受信のメッセージデータがあることを報知することにより、未受信のメッセージデータに対応するメッセージ番号をセンターに通知することで、メッセージデータの再送要求を行うものである。

【００１４】また、この再送要求したメッセージデータを受信すると、未受信の報知は解除される。

【００１５】詳細に説明すると、上記「メッセージ通番サービス」及び「メッセージ再送サービス」の場合、センター側は、図２０に図示する、「メッセージ通番サービス」に対応しているメッセージフィールド（ＭＦ）７２Ｇの１ブロックのワード構成でメッセージを送信する。

【００１６】この図においてＫはメッセージチェックサムを表す。Ｎはメッセージ番号データ部であり、５ビットで０から６３までのサイクリックのデータが格納される。

【００１７】又、Ｒはメッセージ検索フラグであり、「メッセージ通番サービス」に対応するメッセージフィールドのデータでは、このＲは常に１がセットされている。そして、Ｓはこのメッセージのフォーマットを特別のフォーマットで表示させるか否かを規定するビットデータである。

【００１８】そして、このデータに対応して、センター側は、契約したページャーのアドレスに対応して、０番から６３番まで連続したメッセージ番号を付加したメッセージデータを送信し、この送信したメッセージデータをメッセージ番号と対応づけて既存のデータベースに格納管理する。

【００１９】又、このメッセージ通番サービスの対象となるメッセージの形態は、ベクトルフィールド（ＶＦ）７２Ｆで指定され、番号付き数字メッセージ、漢字かな混じりのメッセージに対応する１６進／２進メッセージ、及び英数字メッセージが対応している。

【００２０】

【発明が解決しようとする課題】しかしながら、この「メッセージ通番サービス」、及び、「メッセージ再送サービス」においては、以下に挙げる問題点が発生して

いた。

【００２１】１、ページャー側において、未受信のメッセージデータがあることを報知は、未受信のメッセージデータに対応するメッセージ番号をセンターに通知し、この未受信のメッセージデータの着信することのみで解除されるので、未受信のメッセージデータが用の無いものであっても、再送要求をしなければ報知をリセットできない。

【００２２】２、センター側はメッセージ番号が付加されたメッセージデータをこのメッセージ番号で個別管理するが、６４番目のメッセージデータはメッセージ番号０番のメッセージとして上書して管理するため、

①長時間契約者が着信エリア外にいた場合、この間に送信された番号付きメッセージデータは、全て再送の対象となるものの、着信エリアに契約者が戻ってきた場合、メッセージ番号が一巡以上飛んでいると一部の未受信メッセージデータしか再送対象とされない。

【００２３】②契約者が着信エリアに戻ったときに、丁度一巡して番号付きメッセージデータの着信があった場合、このメッセージ以前に発生した番号飛びエラーが報知されない。

【００２４】したがって、本発明はこのような問題点に鑑み、メッセージ番号付きメッセージデータを受信、記憶管理し、メッセージ番号飛びを報知するページャー等のデータ受信装置おいて、記憶管理したメッセージ番号付きメッセージについて、メッセージ番号を削除可能とし、メッセージ番号飛びのエラーを報知するのみでなく、番号の削除操作を促すようにして、番号付きメッセージデータ受信における利用環境を改善するデータ受信装置を提供することである。

【００２５】

【課題を解決するための手段】請求項１記載の発明は、番号が付加されたデータを受信する受信手段と、この受信手段により受信されたデータを、番号と共に記憶する記憶手段と、前記受信手段によって受信された番号と、前記記憶手段に記憶される最新の番号とを比較する比較手段と、この比較手段により両番号が連続していないことを検出すると、前記記憶手段に記憶された番号を削除する削除手段と、を備えたことを特徴としている。

【００２６】この請求項１記載の発明のデータ受信装置によれば、受信手段により受信されたデータと前回受信されたデータのそれぞれに付加された番号を比較手段が比較し、比較した両番号が連続していないことを検出すると、削除手段が、記憶手段に記憶された番号を削除する。

【００２７】したがって、番号が付加されるデータを受信して記憶管理する際に、過去に記憶されたメッセージ番号付きメッセージデータ（以下、番号付きメッセージデータと記載する）の番号を削除することにより、不要な未受信の番号付きメッセージデータによるメッセージ

番号飛び報知をなくすことができる。

【００２８】又、請求項２記載の発明は、番号が付加されたデータを受信する受信手段と、この受信手段により受信されたデータを番号と共に複数記憶する記憶手段と、前記受信手段によって受信されたデータの着信間隔を記憶する着信間隔記憶手段と、前回受信されたデータと今回受信されたデータとの着信間隔と前記着信間隔記憶手段に記憶されている着信間隔とを比較する比較手段と、この比較手段により、前回受信されたデータと今回受信されたデータとの着信間隔が、前記着信間隔記憶手段に記憶されている着信間隔を越えていることを検出すると、前記記憶手段に記憶されている番号を削除する削除手段と、を備えたことを特徴としている。

【００２９】この請求項２記載の発明のデータ受信装置によれば、受信手段により受信された番号が付加されたデータを、記憶手段が番号と共に複数記憶すると共に、受信されたデータの最大の着信間隔を着信間隔記憶手段が記憶する。

【００３０】そして、前回受信されたデータと今回受信されたデータとの着信間隔が、着信間隔記憶手段に記憶されている着信間隔を越えている場合、削除手段が、記憶された番号を削除する。

【００３１】したがって、着信エリア外に長期間いたことによる、未受信の番号付きメッセージデータによる誤った番号飛びエラーの報知をなくすことができる。

【００３２】更に請求項３記載の発明は、番号が付加されたデータを受信する受信手段と、この受信手段により受信されたデータを、番号と共に複数記憶する記憶手段と、前記受信手段によって受信されたデータのそれぞれの着信間隔の平均値を記憶する平均値記憶手段と、前回受信されたデータと今回受信されたデータとの着信間隔と、前記平均値記憶手段に記憶されている着信間隔の平均値とを比較する比較手段と、この比較手段により、前回受信されたデータと前記受信されたデータの着信間隔が、前記平均値記憶手段に記憶される着信間隔の平均値を越えていることを検出すると、前記記憶手段に記憶されている番号を削除する削除手段と、を備えたことを特徴としている。

【００３３】この請求項３記載の発明のデータ受信装置によれば、受信手段により受信された番号が付加されたデータを、記憶手段が番号と共に複数記憶すると共に、受信されたデータのそれぞれの着信間隔の平均値を平均値記憶手段が記憶する。

【００３４】そして、前回受信されたデータと今回受信されたデータとの着信間隔が、平均値記憶手段に記憶される着信間隔の平均値を越えている場合、削除手段が、記憶された番号を削除する。

【００３５】したがって、着信エリア外に長期間いたことによる、未受信の番号付きメッセージデータによる誤った番号飛びエラーの報知をなくすことができる。

【００３６】この場合、請求項４に記載する発明のように、請求項３記載のデータ受信装置において、前記比較手段により、前回受信されたデータと今回受信されたデータとの着信間隔が、前記平均値記憶手段に記憶される着信間隔の平均値を越えていることを検出すると、前記平均値記憶手段に前回受信されたデータと今回受信されたデータとの着信間隔を記憶させる記憶制御手段を備えるようにしてもよい。

【００３７】また、請求項５に記載する発明のように、請求項１から４の発明において、前記削除手段により番号が削除されたデータを、前記記憶手段とは別の記憶手段に転送する転送手段を備えるようにしてもよい。

【００３８】更に、請求項６に記載する発明のように、請求項１から５の発明において、前記番号の削除を指示する指示手段を更に備え、前記削除手段は、この指示手段により番号の削除を指示されると、前記記憶されている番号を削除するようにしてもよい。

【００３９】

【発明の実施の形態】

（第１の発明の形態）以下、図を参照して本発明の実施の形態を詳細に説明する。

【００４０】図１～図１５は、本発明のデータ受信装置を適用したページャーの第１の実施の形態を示す図である。

【００４１】まず、構成を説明する。

【００４２】図１は、本実施の形態のページャー１の外観図である。この図１において、ページャー１は、その正面にはドットマトリックスタイプの液晶表示パネルにより構成された表示部２を備え、その左側面にはスライド操作で電源ＯＮ／ＯＦＦする電源スイッチと、プッシュ操作で記憶されているメッセージ番号付きメッセージの、メッセージ番号を削除するためのリセットスイッチとを兼ねるメインスイッチ３１を備え、その右側面には呼び出しを鳴音報知するためのスピーカー１７を備えている。また、ページャー１の正面にはメッセージメモリに記憶したメッセージを読み出す操作を行うメモリキー３２、ページャー１の備えている着信待ちモード、時刻設定モード、報知音設定モード、伝言作成モード、番号付きメッセージ着信モード等の各種モードの選択操作を行うセレクトキー３３、各種モードにおける設定操作を行う際に設定操作の決定を指示するセットキー３４を備えている。

【００４３】このページャー１内部の回路構成は、図２に示すブロック図のように、表示部２、キー入力部３、アンテナ４、受信部５、受信データバッファ回路６、ＣＰＵ７、アドレス比較回路８、デインターリーブ回路９、ＢＣＨデコーダー１０、バッファメモリ１１、ＩＤ－ＲＯＭ１２、ＲＯＭ１３、ＲＡＭ１４、リセット回路１５、ドライバ１６、スピーカー１７、ドライバ２１を備えている。

【００４４】表示部２は、例えば、液晶パネル、表示バッファ等で構成され、ドライバ２１により駆動されて液晶パネル上にメッセージ等の情報を表示する回路部である。キー入力部３は、上記図１に示したメインスイッチ３１、メモリキー３２、セレクトキー３３、セットキー３４により構成されており、上記各操作に伴う制御信号をＣＰＵ７に出力する。

【００４５】又、メインスイッチ３１は、プッシュ操作されることにより後述するＣＰＵ７を介してリセット回路１５へ制御信号を出力する。

【００４６】アンテナ４は、図示しない送信基地局から送信される無線信号を受信して受信部５に出力する。受信部５は、受信データバッファ回路６からのＣＰＵ７を介した制御信号によりアンテナ４から入力される無線信号を間欠受信し、復調検波した後、受信データバッファ回路６に出力する。

【００４７】ＣＰＵ（Central Processing Unit）７は、ＲＯＭ１３に格納されている各種制御プログラムに基づいて着信したメッセージデータを解析するとともに、キー入力部３から入力される制御信号に応じてページャー１内の各回路部を制御し、同期部１（Ｓ１）７２Ａより読み出したフレームパターンデータ、フレーム情報（ＦＩ）７２Ｂより読み出したデータ（サイクルＮｏ．フレームＮＯ．、複数回送信の回数）、及び、ブロック情報（ＢＩ）７２Ｄ、及び、ベクトルフィールド（ＶＦ）７２Ｆより読み出したデータ（アドレスフィールド（ＡＦ）７２Ｅ、ベクトルフィールド（ＶＦ）７２Ｆ、メッセージフィールド（ＭＦ）７２Ｇにおける自己のメッセージデータの開始ワード番号やメッセージデータのワード長）を格納する図示しないバッファメモリを備える。

【００４８】又、ＣＰＵ７は、着信までの着信待ち時刻を計時するための計時回路７ａを内蔵し、後述するメッセージデータの着信における番号付きメッセージデータの着信処理において、着信時刻と、前回の番号付きメッセージデータと今回の番号付きメッセージデータとの着信間隔を示す着信待ち受け時間とを計時し、取り込んだメッセージデータ中の番号付きメッセージデータを、着信時刻、及び、着信待ち受け時間と対応づけてＲＡＭ１４内の番号付きメッセージデータメモリエリア１４ｂに格納する。そして、前回の着信と今回の着信までの着信待ち受け時間と、過去に記憶された着信待ち受け時間とを比較し、前回の着信と今回の着信までの着信待ち受け時間が最長である場合、もしくは、前回着信のメッセージデータのメッセージ番号と、今回着信のメッセージデータのメッセージ番号とが飛んでいる場合、過去に着信したメッセージ番号の消去を指示し、メインスイッチ３１の押圧を検出すると直前までに着信した全メッセージ番号付きメッセージのメッセージ番号を消去して、通常の着信メッセージデータとしてＲＡＭ１４内の通常メッ

セージデータメモリエリア１４ａに格納して、受信待機状態に復帰する。

【００４９】アドレス比較回路８は、ＣＰＵ７から出力されるデータトリガに従って動作し、復元処理されたアドレスフィールド（ＡＦ）Ｃ５に格納されるアドレスデータがＩＤ－ＲＯＭ１２に格納されるアドレスデータと一致するか否かを比較比較する回路である。

【００５０】デインターリーブ回路９は、バッファメモリ１１より順次出力された１フレームのバラレルデータについて、同期部（Ｓ１）７２Ａで受信したフレームパターンデータに応じて、フェーズ毎に分離して復元処理（インターリーブ回復）し、バスＢに出力する回路である。

【００５１】ＢＣＨデコーダー１０は、デインターリーブ回路９で復元処理された１ブロックデータに含まれる１０ビットのＢＣＨ符号と偶数パリティビットを用いて、このデータの誤り訂正を施し、エラービット数をＣＰＵ７に出力する。

【００５２】バッファメモリ１１は、自己フレームにおける最大１フレーム分（インターリーブブロック部７３Ｂ）を着信処理終了までブロック単位で一時記憶する。

【００５３】ＩＤ－ＲＯＭ１２は、ページャー１に設定された２１ｂｉｔのアドレスデータとして、図３に示すように、個別呼出専用その１アドレスデータ＃Ａ、個別呼出専用その２アドレスデータ＃Ｂ、グループ呼出専用アドレスデータ＃Ｃ、番号付きメッセージデータ専用アドレスデータ＃Ｄや、受信すべき無線信号の周波数帯、フェーズ、自己フレーム等の個別情報を格納するメモリである。

【００５４】ＲＯＭ（Read Only Memory）１３は、表示制御プログラムやその他各種プログラム等を格納する不揮発性の記憶媒体である。

【００５５】ＲＡＭ（Random Accesss Memory）１４は、図４に示すように通常（アドレスデータ＃Ａ、＃Ｂ、及び＃Ｃで着信したメッセージデータを格納する通常メッセージデータメモリエリア１４ａと、アドレスデータ＃Ｄで着信した番号付きメッセージデータを格納する番号付きメッセージデータメモリエリア１４ｂとを具備している。この番号付きメッセージデータメモリエリア１４ｂ内のメモリ構成を図５に示す。図５に示す番号付きメッセージデータメモリエリア１４ｂ内では、格納メモリ番号の順番に、着信メッセージデータ、そのメッセージ番号、着信日時、着信時刻及び着信待ち受け時間を関連付けて格納している。

【００５６】リセット回路１５は、上記ＣＰＵ７による着信処理において、上記図１に示したメインスイッチ３１のプッシュ操作によるリセット操作が検出され、ＣＰＵ７からリセット処理に係る指示が入力されると、ＲＡＭ１４内の番号付きメッセージデータメモリエリア１４ｂ内において直前の着信メッセージデータとともに記憶されたメッセージ番号を消去する回路である。スピーカー１７は、着呼時にドライバ１６により駆動されて、着呼を報知する際に報音する。

【００５７】次に、第１の実施の形態における着信処理動作について説明する。

【００５８】図６及び７は、ページャー１の着信処理を説明するフローチャートである。

【００５９】まず、ＣＰＵ７は、メインスイッチ３１のスライド操作により電源投入を検出すると、ＣＰＵ７に結合されている各回路部に電源を供給すると共に、各回路部の初期化設定を行い、受信待機モードに入る。

【００６０】このとき、この初期化設定に応じて動作開始し、各フレームパターンに対応する受信データバッファ回路６の制御データを設定し、ＩＤ－ＲＯＭ１２で設定された周波数帯、及びフェーズにおける受信待機状態に入る。この受信待機状態では、ＣＰＵ７は、同期信号部７３Ａの同期部１（Ｓ１）７２Ａの受信によってフレーム同期が検出されるまで、３０秒毎に１．８７５秒間（１フレーム）乃至最大１０秒間の間欠受信を２分間行う。この後、タイムアップするまでの間は同期部１（Ｓ１）７２Ａの受信によるフレーム同期検出が行われる。

【００６１】そしてフレーム同期検出されると、受信部５は、受信した同期信号部７３Ａのデータに基づいた受信データバッファ回路６の制御に従って、自己フレームのタイムスロットで間欠駆動し、受信信号を検波、復調して、受信データバッファ回路６に出力する。

【００６２】受信データバッファ回路６は、後続して受信部５より入力された１フレームのビットデータを８ｂｉｔのバラレルデータに並び換えてバスＢに出力する。この後、ＣＰＵ７は、１フレームの８ｂｉｔパラレルデータを順次取り込んでバッファメモリ１１に格納すると共に、バッファメモリ１１内のバラレルデータを、先に受信した同期部（Ｓ１）７２Ａのフレームパターンデータに基づいて、デインターリーブ９で順次インターリーブ回復させ、ＢＣＨデコーダー１１で誤り訂正処理を施し、再度バッファメモリ１１に書き込む。

【００６３】その後、上記図３に示したＩＤ－ＲＯＭ１２に登録された各アドレスデータ＃Ａ、＃Ｂ、＃Ｃ、及び＃Ｄのいずれかと、バッファメモリ１１に格納されたアドレスフィールド（ＡＦ）７２Ｅ内のアドレスデータとを比較して、一致の際には、一致信号を出力して、受信データバッファ回路６に対し、このフレームのデータを全て受信するよう受信部５の受信動作を継続させる（ステップＳ１）。

【００６４】続いて取り込んだ１フレームのデータのアドレスフィールド（ＡＦ）７２Ｅにおいて一致した着信アドレスデータが上記図３に示したＩＤ－ＲＯＭ１２に登録された＃Ａ、＃Ｂ、＃Ｃ、＃Ｄ（番号付きメッセージデータ専用アドレスデータ）のいずれかであるか比較し（ステップＳ２）、この内、着信したアドレスデータ

が番号付きメッセージのアドレス＃Ｄか否かを判別する（ステップＳ３）。

【００６５】着信アドレスデータが＃Ｄでなく、＃Ａ（個別呼出専用その１アドレスデータ）、＃Ｂ（個別呼出専用その２アドレスデータ）、あるいは＃Ｃ（グループ呼出専用アドレスデータ）である場合は、通常のメッセージデータ着信であるため、この着信メッセージデータをＲＡＭ１４内の上記図４に示した通常メッセージデータメモリエリア１４ａに格納し、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに基づくメッセージを表示するように表示制御を行って（ステップＳ１７）、本処理を終了する。

【００６６】また、着信アドレスデータが＃Ｄ（番号付きメッセージデータ専用アドレスデータ）である場合は、計時部７ａにより着信日時、及び、着信時刻を計時し（ステップＳ４）、この着信日時、及び、着信時刻より前回着信した番号付きメッセージデータからの着信待ち受け時間を算出し（ステップＳ５）、着信した番号付きメッセージデータと共に、着信日時、着信時刻、及び着信待ち受け時間を、番号付きメッセージデータメモリエリア１４ｂに格納アドレスと対応づけて各欄に格納する（ステップＳ６）。

【００６７】この後、前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間と、番号付きメッセージデータメモリエリア１４ｂに記憶される前回までの番号付きメッセージデータに対応するそれぞれの着信待ち受け時間とを比較する（ステップＳ７）。

【００６８】この比較により、ステップＳ８において前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間が、前回までの番号付きメッセージデータに対応するいずれの着信待ち受け時間よりも長い、すなわち、前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間が、最長待ち受け時間であると判断すると、次いで、今回着信した番号付きメッセージデータのメッセージ番号と、前回着信した番号付きメッセージデータのメッセージ番号とを比較して、メッセージ番号が飛んでいるか否かを確認する（ステップＳ９）。今回着信のメッセージデータのメッセージ番号が、前回着信より飛んでいた場合は、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに基づくメッセージ及びメッセージ番号を表示する。

【００６９】しかしながら、メッセージ番号が飛んでおり、最長待ち受け時間であることから、今回着信した番号付きメッセージデータ以前に、未着信の番号付きメッセージデータが数本存在し、更に未着信のままメッセージ番号が一巡している可能性があることになる。

【００７０】したがって、このような場合、メッセージの表示と共にメッセージ番号を反転表示かつ点滅表示させ、更に多数のメッセージが未受信である可能性があり、前回まで着信したメッセージデータのメッセージ番号の消去を促すメッセージを表示する（ステップＳ１０）。

【００７１】このステップＳ１０における番号付きメッセージデータの着信処理により、番号付きメッセージデータメモリエリア１４ｂの格納例を図８に示す。この図８の格納例では、順次着信した番号付きメッセージデータおいて、前回から今回の番号付きメッセージデータの着信までの着信待ち受け時間が「４３３０分」と、過去の着信待ち受け時間と比較して最長で、更にメッセージ番号が飛んで記憶されている場合のデータ格納状態を示している。

【００７２】また、ステップＳ１０における番号付きメッセージデータの着信処理による、表示部２の表示例を図９に示す。この図９に示す表示例では、メッセージとして“先にいっています”、メッセージ番号として［０６］が反転点滅表示された場合を示している。そして、未着信の番号付きメッセージデータが数本存在し、更に未着信のままメッセージ番号が一巡している可能性があることを示すため、「多数のメッセージ未受信の可能性があります！リセットしますか？」というメッセージ番号の消去を指示する内容が表示される。

【００７３】この場合において、メインスイッチ３１の押圧によるリセット操作を検出すると（ステップＳ１１）、番号付きメッセージデータメモリエリア１４ｂに記憶される前回までの番号付きメッセージデータとともに記憶されるメッセージ番号を消去し、更にメッセージ番号が消去されたメッセージデータを通常メッセージデータメモリエリア１４ａに転送し（ステップＳ１２）、着信処理を終了する。また、メモリキー３２、セレクトキー３３、セットキー３４のいずれかを操作すると、報知のリセットのみを行う。

【００７４】また、前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間が、最長待ち受け時間であり、更にステップＳ９で、今回の着信メッセージデータのメッセージ番号と前回の着信メッセージのメッセージ番号が飛んでいない場合は、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに基づくメッセージ及びメッセージ番号を表示する。

【００７５】しかしながら、メッセージ番号が連続していても、最長待ち受け時間であることから、見かけ上連続していても、未着信のままメッセージ番号が１サイクル一巡している可能性があることになる。

【００７６】したがって、このような場合、メッセージ

の表示と共にメッセージ番号を反転表示させ、更に１サイクル以上メッセージ未受信である可能性があり、前回まで着信したメッセージデータのメッセージ番号の消去を促すメッセージを表示する（ステップＳ１３）。

【００７７】このステップＳ１３における番号付きメッセージデータの着信処理により、番号付きメッセージデータメモリエリア１４ｂの格納例を図１０に示す。この図１０の格納例では、順次着信した番号付きメッセージデータおいて、前回から今回の番号付きメッセージデータの着信までの着信待ち受け時間が「４３３０分」と、過去の着信待ち受け時間と比較して最長の場合のデータ格納状態を示している。

【００７８】また、ステップＳ１３における番号付きメッセージデータの着信処理による、表示部２の表示例を図１１に示す。この図１１に示す表示例では、メッセージとして“先にいっています”、メッセージ番号として［０５］が反転表示された場合を示している。そして、未着信のままメッセージ番号が一巡している可能性があることを示すため、「１サイクル以上未受信の可能性があります！リセットしますか？」というメッセージ番号の消去を指示する内容が表示される。

【００７９】この場合において、メインスイッチ３１の押圧によるリセット操作を検出すると（ステップＳ１１）、番号付きメッセージデータメモリエリア１４ｂに記憶される前回までの番号付きメッセージデータとともに記憶されるメッセージ番号を消去し、更にメッセージ番号が消去されたメッセージデータを通常メッセージデータメモリエリア１４ａに転送し（ステップＳ１２）、着信処理を終了する。また、メモリキー３２、セレクトキー３３、セットキー３４のいずれかを操作すると、報知のリセットのみを行う。

【００８０】更に、ステップＳ８において前回までの番号付きメッセージデータに対応するいずれかの着信待ち受け時間が、前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間よりも長い、すなわち、前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間が、最長待ち受け時間でないと判断した場合、次いで、今回着信した番号付きメッセージデータのメッセージ番号と、前回着信した番号付きメッセージデータのメッセージ番号とを比較して、メッセージ番号が飛んでいるか否かを確認する（ステップＳ１４）。今回着信のメッセージデータのメッセージ番号が、前回着信より飛んでいた場合は、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに基づくメッセージ及びメッセージ番号を表示する。

【００８１】しかしながら、メッセージ番号が飛んでいることから、未着信の番号付きメッセージデータがあることになる。

【００８２】したがって、このような場合、メッセージの表示と共にメッセージ番号を点滅表示させ、更に未受信の番号付きメッセージがあり、前回まで着信したメッセージデータのメッセージ番号の消去を促すメッセージを表示する（ステップＳ１５）。

【００８３】このステップＳ１５における番号付きメッセージデータの着信処理により、番号付きメッセージデータメモリエリア１４ｂの格納例を図１２に示す。この図１２の格納例では、順次着信した番号付きメッセージデータおいて、前回着信したメッセージデータのメッセージ番号が［０４］で今回の番号付きメッセージデータのメッセージ番号が［０６］と番号飛びとなっている場合のデータ格納状態を示している。

【００８４】また、ステップＳ１５における番号付きメッセージデータの着信処理による、表示部２の表示例を図１３に示す。この図１３に示す表示例では、メッセージとして“先にいっています”、メッセージ番号として［０６］が点滅表示された場合を示している。そして、未着信のメッセージがある可能性があることを示すため、「メッセージ未受信の可能性があります！リセットしますか？」というメッセージ番号の消去を指示する内容が表示される。

【００８５】この場合において、メインスイッチ３１の押圧によるリセット操作を検出すると（ステップＳ１１）、番号付きメッセージデータメモリエリア１４ｂに記憶される前回までの番号付きメッセージデータとともに記憶されるメッセージ番号を消去し、更にメッセージ番号が消去されたメッセージデータを通常メッセージデータメモリエリア１４ａに転送し（ステップＳ１２）、着信処理を終了する。また、メモリキー３２、セレクトキー３３、セットキー３４のいずれかを操作すると、報知のリセットのみを行う。

【００８６】更に又、ステップＳ８において前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間が、最長待ち受け時間でなく、更にステップＳ１４において今回着信した番号付きメッセージデータのメッセージ番号と、前回着信した番号付きメッセージデータのメッセージ番号とが連続している場合は、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに基づくメッセージ及びメッセージ番号を表示し（ステップＳ１６）、着信処理を終了する。

【００８７】このステップＳ１６における番号付きメッセージデータの着信処理により、番号付きメッセージデータメモリエリア１４ｂの格納例を図１４に示す。この図１４の格納例では、順次着信した番号付きメッセージデータおいて、前回着信したメッセージデータのメッセージ番号が［０４］で今回の番号付きメッセージデータ

のメッセージ番号が［０５］と連続している場合のデータ格納状態を示している。

【００８８】また、ステップＳ１６における番号付きメッセージデータの着信処理による、表示部２の表示例を図１５に示す。この図１３に示す表示例では、メッセージとして“先にいっています”、メッセージ番号として［０５］が表示された場合を示している。

【００８９】以上のように、本第１の実施の形態のページャー１では、番号付きメッセージデータを受信するメッセージ通番サービスに対応して、その番号付きメッセージデータに、メッセージ番号、着信日時、着信時刻、及び、前回の着信から今回の着信までの着信待ち受け時間も含めて格納する番号付きメッセージデータメモリエリア１４ｂをＲＡＭ１４内に有し、番号付きメッセージデータの着信処理においては、番号付きメッセージデータ用のアドレスデータの着信を検出すると、ＲＡＭ１４内の番号付きメッセージデータメモリエリア１４ｂに格納し、前回の着信と今回の着信までの着信待ち受け時間を算出し、今回着信したメッセージデータのメッセージ番号と前回着信したメッセージデータのメッセージ番号とが飛んでいる場合は、過去に記憶された着信待ち受け時間と、前回の着信と今回の着信までの着信待ち受け時間とを比較する。

【００９０】そして、ＣＰＵ７は、前回の着信と今回の着信までの着信待ち受け時間が最長待ち受け時間であると判断した場合は、前回までの着信メッセージデータのメッセージ番号の消去を指示し、リセット操作を確認すると前回までに着信した全メッセージデータのメッセージ番号を消去して、通常の着信メッセージデータとしてＲＡＭ１４内の通常メッセージデータメモリエリア１４ａに格納するようにしたため、番号が付加されるデータを受信して記憶管理する際に、その過去に記憶された番号付きメッセージデータの番号を削除することにより無意味な未受信メッセージに対する番号飛びエラーの報知をなくすことができる。

【００９１】又、番号が付加されるデータを受信して記憶管理するページャー等において、着信エリア外に長期間いたことによる、誤った未受信メッセージに対する番号飛びエラーの報知をなくすことができる。

【００９２】尚、上述の第１の実施の形態では、着信待ち受け時間間隔を番号付きメッセージデータの着信毎に記憶していたが、過去に着信した番号付きメッセージデータの最長着信待ち受け間隔のみを記憶するメモリエリアをＲＡＭ１４内に設けて、番号付きメッセージデータの着信の際は、今回の着信待ち受け間隔を記憶された最大着信待ち受け間隔と比較させても良い。

【００９３】（第２の実施の形態）第１の実施の形態では、着信待ち受け時間の長さのみを判定基準として、メッセージデータの１サイクル以上の未受信を判別するようにしたが、過去の着信待ち受け時間の平均値を用いることにより、１サイクル以上の未受信を判別させることも可能である。

【００９４】以下、図を参照して本発明の第２の実施の形態を詳細に説明する。尚、第１の実施の形態と同一図面を使用し、同一番号の箇所は、その説明を省略する。

【００９５】図１６～図１８は、本発明のデータ受信装置を適用したページャーの第２の実施の形態を示す図である。

【００９６】第２の実施の形態において、ＣＰＵ（Central Processing Unit）７は、ＲＯＭ１３に格納されている各種制御プログラムに基づいて着信したメッセージデータを解析するとともに、キー入力部３から入力される制御信号に応じてページャー１内の各回路部を制御する。また、着信までの着信待ち時刻を計時するための計時回路７ａを内蔵し、後述するメッセージデータの着信における番号付きメッセージデータの着信処理において、着信時刻と、前回の番号付きメッセージデータと今回の番号付きメッセージデータとの着信間隔を示す着信待ち受け時間とを計時し、取り込んだメッセージデータ中の番号付きメッセージデータを、着信時刻、及び、着信待ち受け時間と対応づけてＲＡＭ１４内の番号付きメッセージデータメモリエリア１４ｂに格納する。そして、前回の着信と今回の着信までの着信待ち受け時間と、ＲＡＭ１４内の平均値メモリエリアに格納される過去の着信待ち受け時間の平均値とを比較し、前回の着信と今回の着信までの着信待ち受け時間が平均値を越えている場合、もしくは、前回着信のメッセージデータのメッセージ番号と、今回着信のメッセージデータのメッセージ番号とが飛んでいる場合、過去に着信したメッセージ番号の消去を指示し、メインスイッチ３１の押圧を検出すると直前までに着信した全メッセージ番号付きメッセージのメッセージ番号を消去して、通常の着信メッセージデータとしてＲＡＭ１４内の通常メッセージデータメモリエリア１４ａに格納して、受信待機状態に復帰する。

【００９７】ＲＡＭ（Random Access Memory）１４は、図１６に示すように通常の着信メッセージを格納する通常メッセージデータメモリエリア１４ａと、番号付きの着信メッセージを格納する番号付きメッセージデータメモリエリア１４ｂと、過去に着信した番号付きメッセージデータの着信待ち受け時間の平均値を記憶する平均値メモリエリア１４ｃとを具備している。

【００９８】次に、第２の実施の形態における着信処理動作について説明する。

【００９９】図１７及び１８は、ページャー１の着信処理を説明するフローチャートである。

【０１００】まず、ＣＰＵ７は、メインスイッチ３１のスライド操作により電源投入を検出すると、ＣＰＵ７に結合されている各回路部に電源を供給すると共に、各回路部の初期化設定を行い、受信待機モードに入る。

【０１０１】このとき、この初期化設定に応じて動作開始し、各フレームパターンに対応する受信データバッファ回路６の制御データを設定し、ＩＤ－ＲＯＭ１２で設定された周波数帯、及びフェーズにおける受信待機状態に入る。この受信待機状態では、ＣＰＵ７は、同期信号部７３Ａの同期部１（Ｓ１）７２Ａの受信によってフレーム同期が検出されるまで、３０秒毎に１．８７５秒間（１フレーム）乃至最大１０秒間の間欠受信を２分間行う。この後、タイムアップするまでの間は同期部１（Ｓ１）７２Ａの受信によるフレーム同期検出が行われる。

【０１０２】そしてフレーム同期検出されると、受信部５は、受信した同期信号部７３Ａのデータに基づいた受信データバッファ回路６の制御に従って、自己フレームのタイムスロットで間欠駆動し、受信信号を検波、復調して、受信データバッファ回路６に出力する。

【０１０３】受信データバッファ回路６は、後続して受信部５より入力された１フレームのビットデータを８ｂｉｔのパラレルデータに並び換えてバスＢに出力する。この後、ＣＰＵ７は、１フレームの８ｂｉｔパラレルデータを順次取り込んでバッファメモリ１１に格納すると共に、バッファメモリ１１内のパラレルデータを、先に受信した同期部（Ｓ１）７２Ａのフレームパターンデータに基づいて、デインターリーブ９で順次インターリーブ回復させ、ＢＣＨデコーダー１１で誤り訂正処理を施し、再度バッファメモリ１１に書き込む。

【０１０４】その後、上記図３に示したＩＤ－ＲＯＭ１２に登録された各アドレスデータ＃Ａ、＃Ｂ、＃Ｃ、及び＃Ｄのいずれかと、バッファメモリ１１に格納されたアドレスフィールド（ＡＦ）７２Ｅ内のアドレスデータとを比較して、一致の際には、一致信号を出力して、受信データバッファ回路６に対し、このフレームのデータを全て受信するよう受信部５の受信動作を継続させる（ステップＳ２１）。

【０１０５】続いて取り込んだ１フレームのデータのアドレスフィールド（ＡＦ）７２Ｅにおいて一致した着信アドレスデータが上記図３に示したＩＤ－ＲＯＭ１２に登録された＃Ａ、＃Ｂ、＃Ｃ、＃Ｄ（番号付きメッセージデータ専用アドレスデータ）のいずれかであるか比較し（ステップＳ２２）、この内、着信したアドレスデータが番号付きメッセージのアドレス＃Ｄか否かを判別する（ステップＳ２３）。

【０１０６】着信アドレスデータが＃Ｄでなく、＃Ａ（個別呼出専用その１アドレスデータ）、＃Ｂ（個別呼出専用その２アドレスデータ）、あるいは＃Ｃ（グループ呼出専用アドレスデータ）である場合は、通常のメッセージデータ着信であるため、この着信メッセージデータをＲＡＭ１４内の上記図１６に示した通常メッセージデータメモリエリア１４ａに格納し、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに

基づくメッセージを表示するように表示制御を行って（ステップＳ３８）、本処理を終了する。

【０１０７】また、着信アドレスデータが＃Ｄ（番号付きメッセージデータ専用アドレスデータ）である場合は、計時部７ａにより着信日時、及び、着信時刻を計時し（ステップＳ２４）、この着信日時、及び、着信時刻より前回着信した番号付きメッセージデータからの着信待ち受け時間を算出し（ステップＳ２５）、着信した番号付きメッセージデータと共に、着信日時、着信時刻、及び着信待ち受け時間を、番号付きメッセージデータメモリエリア１４ｂに格納アドレスと対応づけて各欄に格納する（ステップＳ２６）。

【０１０８】この後、前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間と、平均値メモリエリア１４ｃに記憶される過去に着信したそれぞれの番号付きメッセージデータの着信待ち受け時間の平均値とを比較する（ステップＳ２７）。

【０１０９】この比較により、ステップＳ２８において前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間が、番号付きメッセージデータの着信待ち受け時間の平均値を越えていると判断すると、次いで、今回着信した番号付きメッセージデータのメッセージ番号と、前回着信した番号付きメッセージデータのメッセージ番号とを比較して、メッセージ番号が飛んでいるか否かを確認する（ステップＳ２９）。今回着信のメッセージデータのメッセージ番号が、前回着信より飛んでいた場合は、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに基づくメッセージ及びメッセージ番号を表示する。

【０１１０】しかしながら、メッセージ番号が飛んでおり、着信待ち受け時間の平均値を越えていることから、今回着信した番号付きメッセージデータ以前に、未着信の番号付きメッセージデータが数本存在し、更に未着信のままメッセージ番号が一巡している可能性があることになる。

【０１１１】したがって、このような場合、メッセージの表示と共にメッセージ番号を反転表示かつ点滅表示させ、更に多数のメッセージが未受信である可能性があり、前回まで着信したメッセージデータのメッセージ番号の消去を促すメッセージを表示する（ステップＳ３０）。

【０１１２】このステップＳ３０における番号付きメッセージデータの着信処理における、番号付きメッセージデータメモリエリア１４ｂの格納例は図８と同様である。

【０１１３】また、ステップＳ３０における番号付きメッセージデータの着信処理による、表示部２の表示例は

図９に示す通りである。

【０１１４】この場合において、メインスイッチ３１の押圧によるリセット操作を検出すると（ステップＳ３１）、番号付きメッセージデータメモリエリア１４ｂに記憶される前回までの番号付きメッセージデータとともに記憶されるメッセージ番号を消去し、更にメッセージ番号が消去されたメッセージデータを通常メッセージデータメモリエリア１４ａに転送し、前回着信から今回着信までの着信待ち受け時間を、着信待ち受け時間の平均値として平均値メモリエリア１４ｃに設定して（ステップＳ３２）、着信処理を終了する。

【０１１５】また、これとは反対に、メインスイッチ３１の押圧によるリセット操作を検出せず、メモリキー３２、セレクトキー３３、セットキー３４のいずれかを操作すると、報知のリセットのみを行ってメッセージ番号を消去せず、前回着信と今回着信との着信待ち受け時間を加味して、着信待ち受け時間の平均値を算出し、平均値メモリエリア１４ｃに再設定し（ステップＳ３３）、着信処理を終了する。

【０１１６】前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間が着信待ち受け時間の平均値を越えており、更にステップＳ２９で、今回の着信メッセージデータのメッセージ番号と前回の着信メッセージのメッセージ番号が飛んでいない場合は、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに基づくメッセージ及びメッセージ番号を表示する。

【０１１７】しかしながら、メッセージ番号が連続していても、着信待ち受け時間の平均値を越えていることから、見かけ上連続していても、未着信のままメッセージ番号が１サイクル一巡している可能性があることになる。

【０１１８】したがって、このような場合、メッセージの表示と共にメッセージ番号を反転表示させ、更に１サイクル以上メッセージ未受信である可能性があり、前回まで着信したメッセージデータのメッセージ番号の消去を促すメッセージを表示する（ステップＳ３４）。

【０１１９】このステップＳ３４における番号付きメッセージデータの着信処理により、番号付きメッセージデータメモリエリア１４ｂの格納例は図１０に示す通りである。

【０１２０】また、ステップＳ３４における番号付きメッセージデータの着信処理による、表示部２の表示例を図１１に示すものと同様である。

【０１２１】この場合において、メインスイッチ３１の押圧によるリセット操作を検出すると（ステップＳ３１）、番号付きメッセージデータメモリエリア１４ｂに記憶される前回までの番号付きメッセージデータとともに記憶されるメッセージ番号を消去し、更にメッセージ番号が消去されたメッセージデータを通常メッセージデータメモリエリア１４ａに転送し、前回着信から今回着信までの着信待ち受け時間を、着信待ち受け時間の平均値として平均値メモリエリア１４ｃに設定して（ステップＳ３２）、着信処理を終了する。

【０１２２】また、これとは反対に、メインスイッチ３１の押圧によるリセット操作を検出せず、メモリキー３２、セレクトキー３３、セットキー３４のいずれかを操作すると、メッセージ番号を消去せずに報知のリセットのみを行って、前回着信と今回着信との着信待ち受け時間を加味して、着信待ち受け時間の平均値を算出し、平均値メモリエリア１４ｃに再設定し（ステップＳ３３）、着信処理を終了する。

【０１２３】更に、ステップＳ２８において前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間が、着信待ち受け時間の平均値を越えないと判断した場合、次いで、今回着信した番号付きメッセージデータのメッセージ番号と、前回着信した番号付きメッセージデータのメッセージ番号とを比較して、メッセージ番号が飛んでいるか否かを確認する（ステップＳ３５）。

【０１２４】そして、今回着信のメッセージデータのメッセージ番号が、前回着信より飛んでいた場合は、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに基づくメッセージ及びメッセージ番号を表示する。

【０１２５】しかしながら、メッセージ番号が飛んでいることから、未着信の番号付きメッセージデータがあることになる。

【０１２６】したがって、このような場合、メッセージの表示と共にメッセージ番号を点滅表示させ、更に未受信の番号付きメッセージがあり、前回まで着信したメッセージデータのメッセージ番号の消去を促すメッセージを表示する（ステップＳ３６）。

【０１２７】このステップＳ３６における番号付きメッセージデータの着信処理により、番号付きメッセージデータメモリエリア１４ｂの格納例は図１２に示すとおりである。

【０１２８】また、ステップＳ３６における番号付きメッセージデータの着信処理による、表示部２の表示例を図１３に示すものと同様である。

【０１２９】この場合において、メインスイッチ３１の押圧によるリセット操作を検出すると（ステップＳ３１）、番号付きメッセージデータメモリエリア１４ｂに記憶される前回までの番号付きメッセージデータとともに記憶されるメッセージ番号を消去し、更にメッセージ番号が消去されたメッセージデータを通常メッセージデータメモリエリア１４ａに転送し、前回着信から今回着信までの着信待ち受け時間を、着信待ち受け時間の平均

値として平均値メモリエリア１４ｃに設定して（ステップＳ３２）、着信処理を終了する。

【０１３０】また、これとは反対に、メインスイッチ３１の押圧によるリセット操作を検出せず、メモリキー３２、セレクトキー３３、セットキー３４のいずれかを操作すると、メッセージ番号を消去せずに報知のリセットのみを行って、前回着信と今回着信との着信待ち受け時間を加味して、着信待ち受け時間の平均値を算出し、平均値メモリエリア１４ｃに再設定し（ステップＳ３３）、着信処理を終了する。

【０１３１】ステップＳ２８において前回の番号付きメッセージデータの着信から今回の番号付きメッセージデータの着信までの着信待ち受け時間が、着信待ち受け時間の平均値を越えず、更にステップＳ３５において今回着信した番号付きメッセージデータのメッセージ番号と、前回着信した番号付きメッセージデータのメッセージ番号とが連続している場合は、ドライバ１６により駆動されるスピーカー１７の報知音により着信を報知するとともに、表示部２にその着信メッセージデータに基づくメッセージ及びメッセージ番号を表示し（ステップＳ３７）、その後、前回着信と今回着信との着信待ち受け時間を加味して、着信待ち受け時間の平均値を算出し、平均値メモリエリア１４ｃに再設定して（ステップＳ３３）、着信処理を終了する。

【０１３２】このステップＳ３７における番号付きメッセージデータの着信処理により、番号付きメッセージデータメモリエリア１４ｂの格納例は図１４に示すとおりである。

【０１３３】また、ステップＳ３７における番号付きメッセージデータの着信処理による、表示部２の表示例を図１５に示すものと同様である。

【０１３４】以上のように、本第２の実施の形態のページャー１では、番号付きメッセージデータを受信するメッセージ通番サービスに対応して、その番号付きメッセージデータに、メッセージ番号、着信日時、着信時刻、及び、前回の着信から今回の着信までの着信待ち受け時間も含めて格納する番号付きメッセージデータメモリエリア１４ｂをＲＡＭ１４内に有するとともに、過去の着信待ち受け時間の平均値を記憶させることにより、番号付きメッセージデータの着信処理においては、番号付きメッセージデータ用のアドレスデータの着信を検出すると、ＲＡＭ１４内の番号付きメッセージデータメモリエリア１４ｂに格納し、前回の着信と今回の着信までの着信待ち受け時間を算出し、着信待ち受け時間の平均値と、前回の着信と今回の着信までの着信待ち受け時間とを比較する。

【０１３５】そして、ＣＰＵ７は、前回の着信と今回の着信までの着信待ち受け時間が最長待ち受け時間を越えている場合、もしくは、前回着信のメッセージデータのメッセージ番号と、今回着信のメッセージデータのメッセージ番号とが飛んでいる場合は、前回までの着信メッセージデータのメッセージ番号の消去を指示し、リセット操作を確認すると前回までに着信した全メッセージデータのメッセージ番号を消去して、通常の着信メッセージデータとしてＲＡＭ１４内の通常メッセージデータメモリエリア１４ａに格納するようにしたため、番号が付加されるデータを受信して記憶管理する際に、その過去に記憶された番号付きメッセージデータの番号を削除することにより不要な未受信の番号付きメッセージデータに対する番号飛びエラーの報知をなくすことができる。

【０１３６】又、着信エリア外に長期間いたことによる、未受信の番号付きメッセージデータによる誤った番号飛びエラーの報知をなくすことができる。

【０１３７】なお、上記各実施の形態では、前回まで着信した全メッセージのメッセージ番号を消去し、通常の着信メッセージデータとしてＲＡＭ１４内の通常メッセージデータメモリエリア１４ａに格納するようにしたが、この状態でメッセージの再送要求を行うとすると、ページャー１内は全ての番号付きメッセージを格納可能な状態となっているため、ページングセンターから全ての番号付きメッセージデータを再送してもらうことにより、全ての番号付きメッセージデータを格納することが可能である。

【０１３８】また、上記の各実施の形態の着信処理では、メッセージ番号の格納を消去する操作を促すメッセージを表示し、メインスイッチ３１のプッシュ操作によるリセット操作を検出してから、番号付きメッセージデータメモリエリア１４ｂに格納されたメッセージ番号を消去するようにしたが、そのリセット操作を不要にして、自動的にメッセージ番号を消去する処理としてもよい。

【０１３９】そうすれば、ユーザーに意識させることなくメッセージ番号の不連続格納状態を解除して、受信待機状態に復帰することができ、メッセージ番号の不連続格納状態が発生した場合のユーザーの操作負担を省略することができる。

【０１４０】さらにまた、第２の実施の形態において、着信待ち受け時間の平均値の算出方法は、過去の着信待ち受け時間を総計して、格納されているメッセージデータの本数から１を引いたもので割る方法が一般的だが、これに限らず、平均値メモリエリア１４ｃに格納されていた着信待ち受け時間の平均値に、前回着信と今回着信との着信待ち受け時間の平均値を加算して、２で割ったものを新しい着信待ち受け時間の平均値として再設定してもよい。

【０１４１】そして、直近の数本の着信メッセージデータから着信待ち受け時間の平均値を逐次算出して更新させても良い。

【０１４２】

【発明の効果】請求項１記載の発明のデータ受信装置に

よれば、番号が付加されるデータを受信して記憶管理する際に、その過去に記憶された番号付きメッセージデータの番号を削除することにより無意味な未受信メッセージに対する番号飛びエラーの報知をなくすことができる。

【０１４３】請求項２記載の発明のデータ受信装置によれば、番号が付加されるデータを受信して記憶管理するページャー等において、着信エリア外に長期間いたことによる、誤った未受信メッセージに対する番号飛びエラーの報知をなくすことができる。

【０１４４】請求項３記載の発明のデータ受信装置によれば、番号が付加されるデータを受信して記憶管理するページャー等において、着信エリア外に長期間いたことによる、誤った未受信メッセージに対する番号飛びエラーの報知をなくすことができる。

【０１４５】請求項４記載の発明のデータ受信装置によれば、請求項３記載の発明に加え、今回のメッセージデータの受信に係わる着信待ち受け間隔が、着信待ち受け時間の平均値を越えている場合、前回着信から今回の着信までの着信待ち受け時間を着信待ち受け時間の平均値として上書きすることができる。

【０１４６】請求項５記載の発明のデータ受信装置によれば、請求項１から４までのいずれかに記載の発明に加え、メッセージ番号を消去したメッセージデータを、通常のメッセージデータのメモリに転送するので、番号付きメッセージデータのメモリエリアにおける不要なデータの増加を防ぐことができ、メッセージデータの記憶管理がしやすくなる。

【０１４７】請求項６記載の発明のデータ受信装置によれば、請求項１から５までのいずれかに記載の発明に加え、過去に記憶した番号付きメッセージデータの番号消去に際して、一度ページャーの利用者に消去確認を促すので、不用意な番号の消去を防ぐことができる。

【図面の簡単な説明】

【図１】本発明のデータ受信装置を適用した一実施の形態のページャー１の外観図。

【図２】図１のページャー１内の回路構成を示すブロック図。

【図３】図２のＩＤ－ＲＯＭ１２内のメモリ構成を示す図。

【図４】図２のＲＡＭ１４内のメモリ構成を示す図。

【図５】図４の番号付きメッセージデータメモリエリア１４ｂ内のメモリ構成を示す図。

【図６】図２のページャー１における着信処理を説明するフローチャート。

【図７】図２のページャー１における着信処理を説明するフローチャート。

【図８】図７のステップＳ１０における番号付きメッセージデータの着信処理により番号付きメッセージデータメモリエリア１４ｂに格納されたデータ例を示す図。

【図９】図７のステップＳ１０における番号付きメッセージデータの着信処理により表示部２に表示された番号付きメッセージの表示例を示す図。

【図１０】図７のステップＳ１３における番号付きメッセージデータの着信処理により番号付きメッセージデータメモリエリア１４ｂに格納されたデータ例を示す図。

【図１１】図７のステップＳ１３における番号付きメッセージデータの着信処理により表示部２に表示された番号付きメッセージの表示例を示す図。

【図１２】図７のステップＳ１５における番号付きメッセージデータの着信処理により番号付きメッセージデータメモリエリア１４ｂに格納されたデータ例を示す図。

【図１３】図７のステップＳ１５における番号付きメッセージデータの着信処理により表示部２に表示された番号付きメッセージの表示例を示す図。

【図１４】図７のステップＳ１６における番号付きメッセージデータの着信処理により番号付きメッセージデータメモリエリア１４ｂに格納されたデータ例を示す図。

【図１５】図７のステップＳ１６における番号付きメッセージデータの着信処理により表示部２に表示された番号付きメッセージの表示例を示す図。

【図１６】第２の実施の形態における、図２のＲＡＭ１４内のメモリ構成を示す図。

【図１７】第２の実施の形態における、図２のページャー１における着信処理を説明するフローチャート。

【図１８】第２の実施の形態における、図２のページャー１における着信処理を説明するフローチャート。

【図１９】高度ページング方式である標準規格「ＲＣＲ　ＳＴＤ－４３」で規定されたデータ構成を示す図。

【図２０】標準規格「ＲＣＲ　ＳＴＤ－４３」におけるメッセージフィールド（ＭＦ）７２Ｇの１ブロックのワード構成を表す概略図。

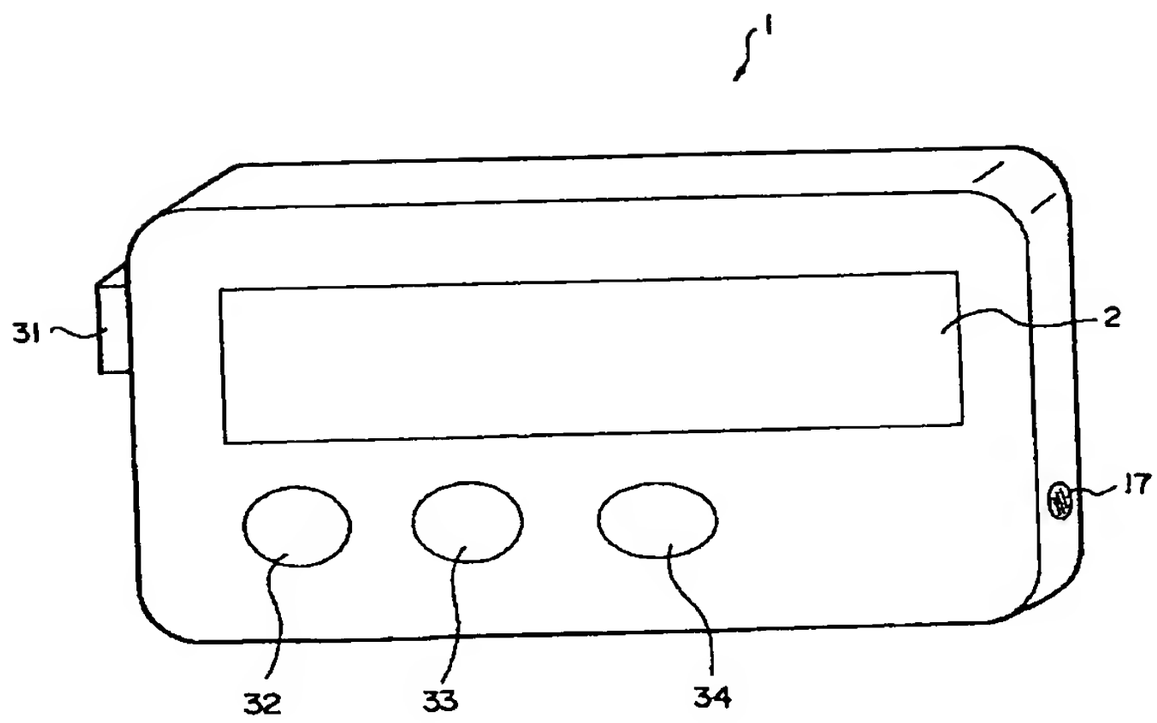
【符号の説明】

１　ページャー
２　表示部
３　キー入力部
４　アンテナ
５　受信部
６　受信データバッファ回路
７　ＣＰＵ
８　アドレス比較回路
９　デインターリーブ回路
１０　ＢＣＨデコーダー
１１　バッファメモリ
１２　ＩＤ－ＲＯＭ
１３　ＲＯＭ
１４　ＲＡＭ
１４ａ　通常メッセージデータメモリエリア
１４ｂ　番号付きメッセージデータメモリエリア
１５　リセット回路

25　　26

１６　ドライバ
１７　スピーカー
３１　メインスイッチ
＊３２　メモリキー
３３　セレクトキー
＊　３４　セットキー

【図１】

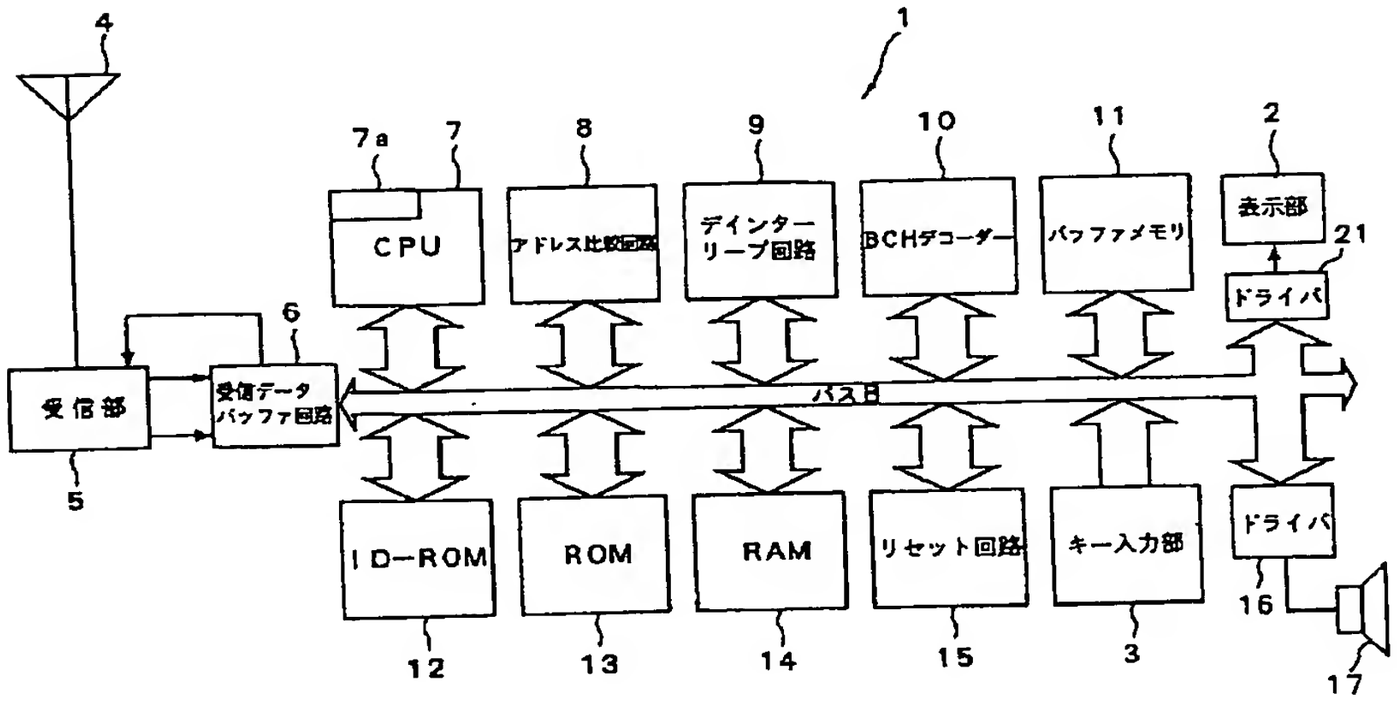


【図３】

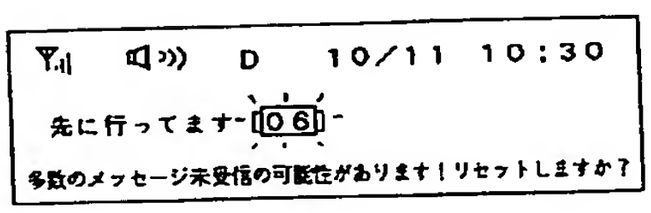
12

アドレス	フレームデータ	アドレスデータ	プライオリティ
＃A	…….	……	個別呼出専用その1
＃B	……	……	個別呼出専用その2
＃C	……	……	グループ呼出専用
＃D	……	……	番号付きメッセージ専用

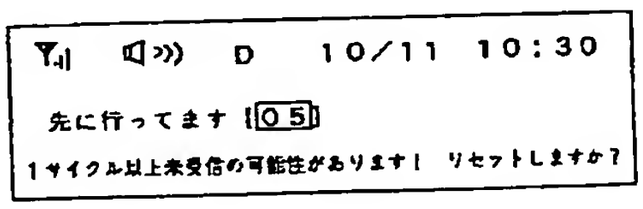
【図２】



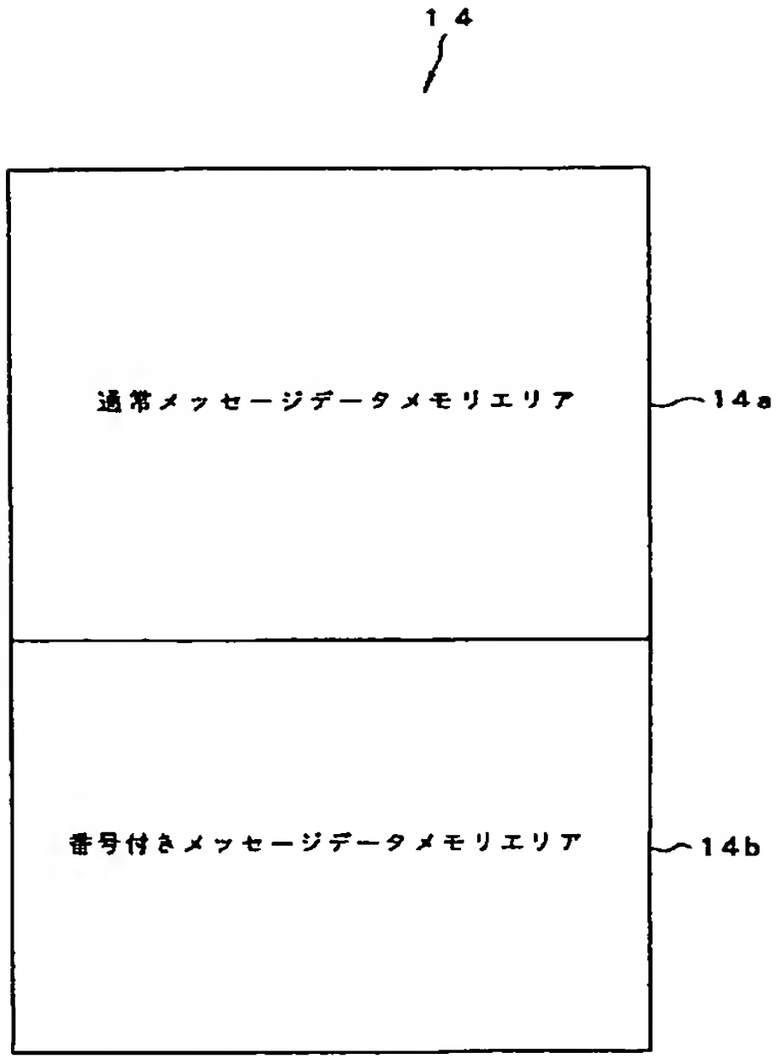
【図９】



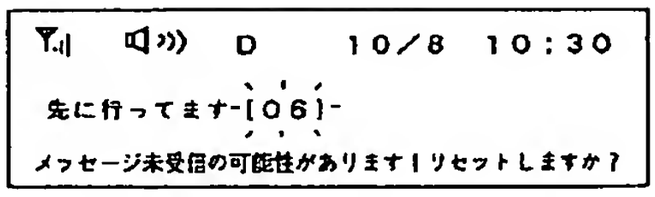
【図１１】



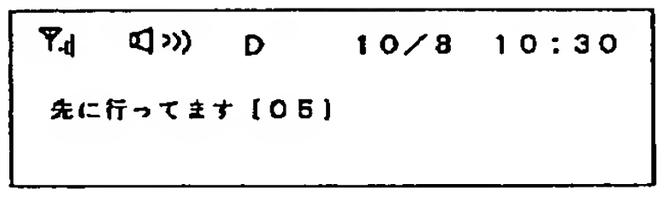
【図４】



【図１３】



【図１５】

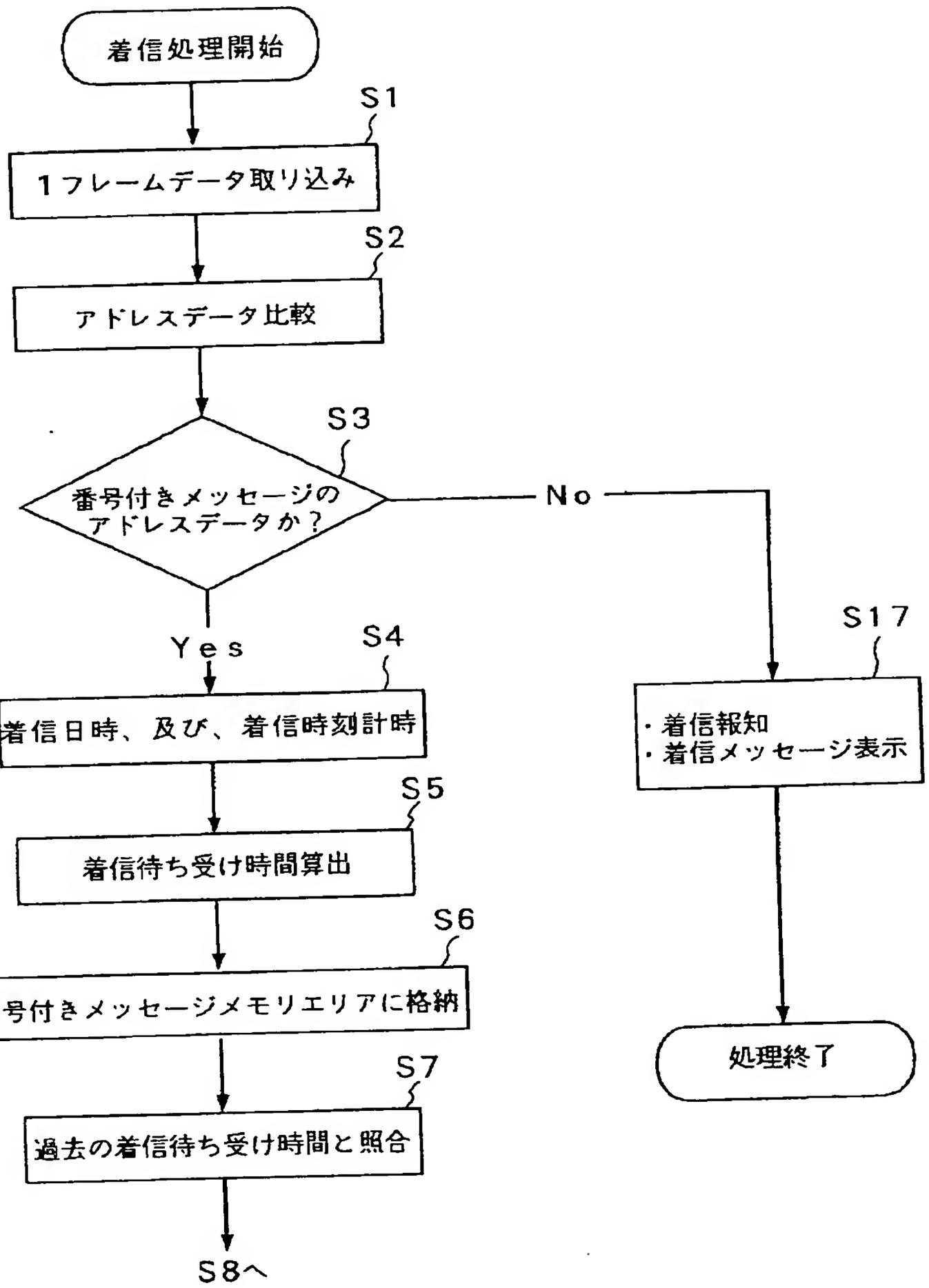


【図５】

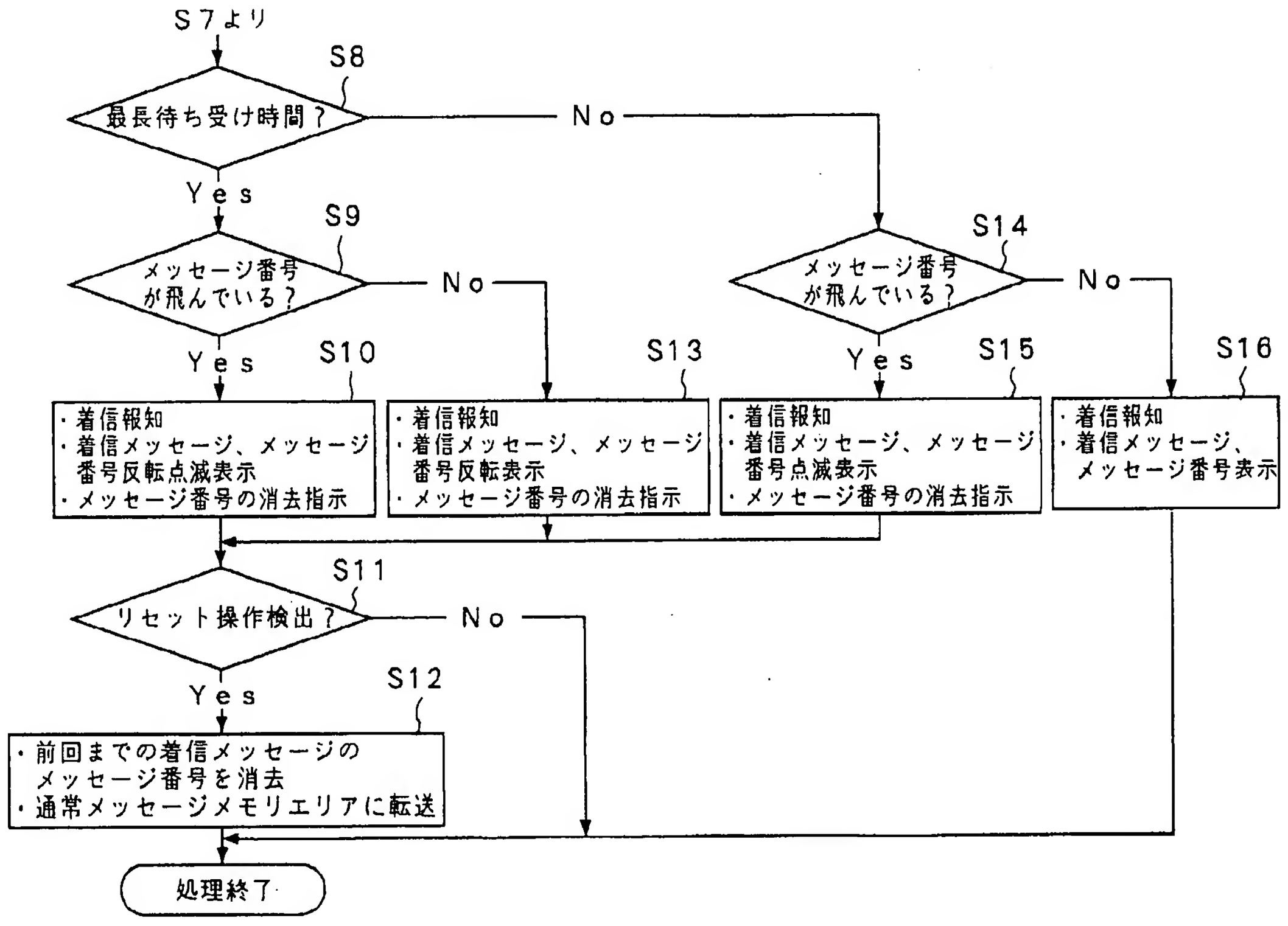
14b

格納メモリ番号	着信メッセージデータ	メッセージ番号	着信日時	着信時刻	着信待ち受け時間（分）
０１	至急連絡せよ	０１	10/8	９：００	
０２	駅で待つ	０２	10/8	９：３０	３０
０３	直帰です	０３	10/8	９：５０	２０
０４	定時連絡します	０４	10/8	１０：２０	３０

【図６】


着信処理開始
S1
１フレームデータ取り込み
S2
アドレスデータ比較
S3
番号付きメッセージの
アドレスデータか？
No
Yes
S4
着信日時、及び、着信時刻計時
S5
着信待ち受け時間算出
S6
番号付きメッセージメモリエリアに格納
S7
過去の着信待ち受け時間と照合
S8
S17
・着信報知
・着信メッセージ表示
処理終了

【図7】


S7より
S8
最長待ち受け時間？
No
Yes
S9
メッセージ番号が飛んでいる？
No
Yes
S10
・着信報知
・着信メッセージ、メッセージ番号反転点滅表示
・メッセージ番号の消去指示
S13
・着信報知
・着信メッセージ、メッセージ番号反転表示
・メッセージ番号の消去指示
S14
メッセージ番号が飛んでいる？
No
Yes
S15
・着信報知
・着信メッセージ、メッセージ番号点滅表示
・メッセージ番号の消去指示
S16
・着信報知
・着信メッセージ、メッセージ番号表示
S11
リセット操作検出？
No
Yes
S12
・前回までの着信メッセージのメッセージ番号を消去
・通常メッセージメモリエリアに転送
処理終了

【図８】

14b

格納メモリ番号	着信メッセージデータ	メッセージ番号	着信日時	着信時刻	着信待ち受け時間（分）
０１	至急連絡せよ	０１	10/8	９：００	
０２	駅で待つ	０２	10/8	９：３０	３０
０３	直帰です	０３	10/8	９：５０	２０
０４	定時連絡します	０４	10/8	１０：２０	３０
０５	先に行ってます	０６	10/11	１０：３０	４３３０

【図１０】

14b

格納メモリ番号	着信メッセージデータ	メッセージ番号	着信日時	着信時刻	着信待ち受け時間（分）
０１	至急連絡せよ	０１	10/8	９：００	
０２	駅で待つ	０２	10/8	９：３０	３０
０３	直帰です	０３	10/8	９：５０	２０
０４	定時連絡します	０４	10/8	１０：２０	３０
０５	先に行ってます	０５	10/11	１０：３０	４３３０

【図１２】

１４ｂ

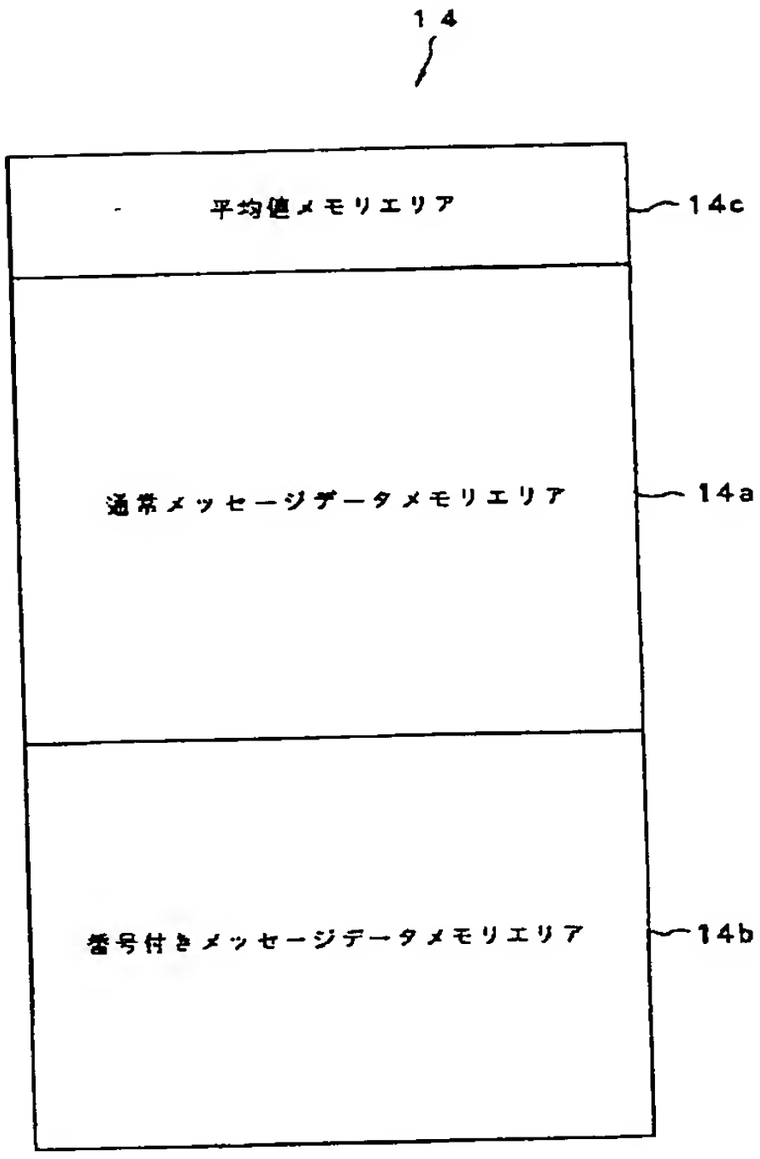
格納メモリ番号	着信メッセージデータ	メッセージ番号	着信日時	着信時刻	着信待ち受け時間（分）
０１	至急連絡せよ	０１	10/8	９：００	
０２	駅で待つ	０２	10/8	９：３０	３０
０３	直帰です	０３	10/8	９：５０	２０
０４	定時連絡します	０４	10/8	１０：２０	３０
０５	先に行ってます	０６	10/8	１０：３０	１０

【図１４】

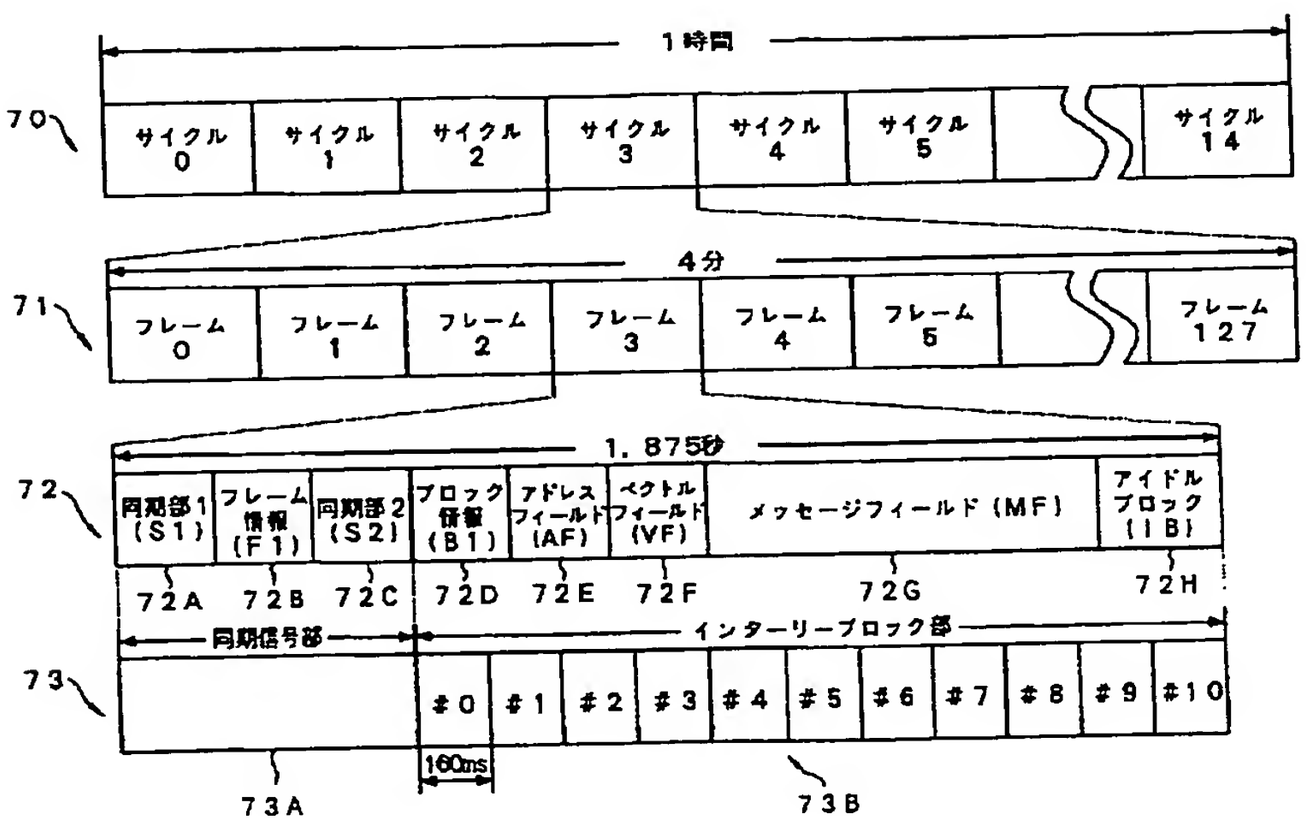
１４ｂ

格納メモリ番号	着信メッセージデータ	メッセージ番号	着信日時	着信時刻	着信待ち受け時間（分）
０１	至急連絡せよ	０１	10/8	９：００	
０２	駅で待つ	０２	10/8	９：３０	３０
０３	直帰です	０３	10/8	９：５０	２０
０４	定時連絡します	０４	10/8	１０：２０	３０
０５	先に行ってます	０５	10/8	１０：３０	１０

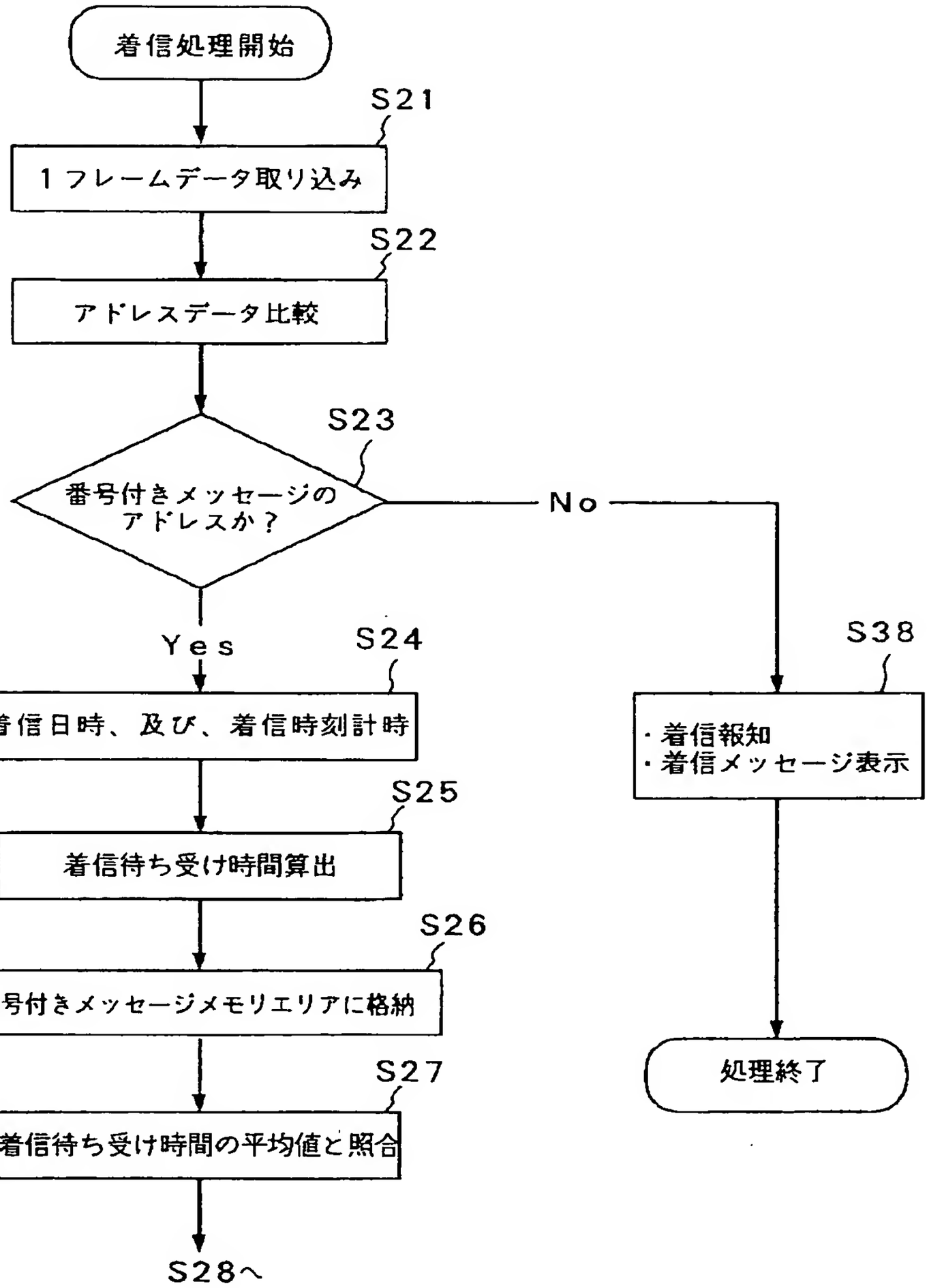
【図１６】


14
平均値メモリエリア
14c
通常メッセージデータメモリエリア
14a
番号付きメッセージデータメモリエリア
14b

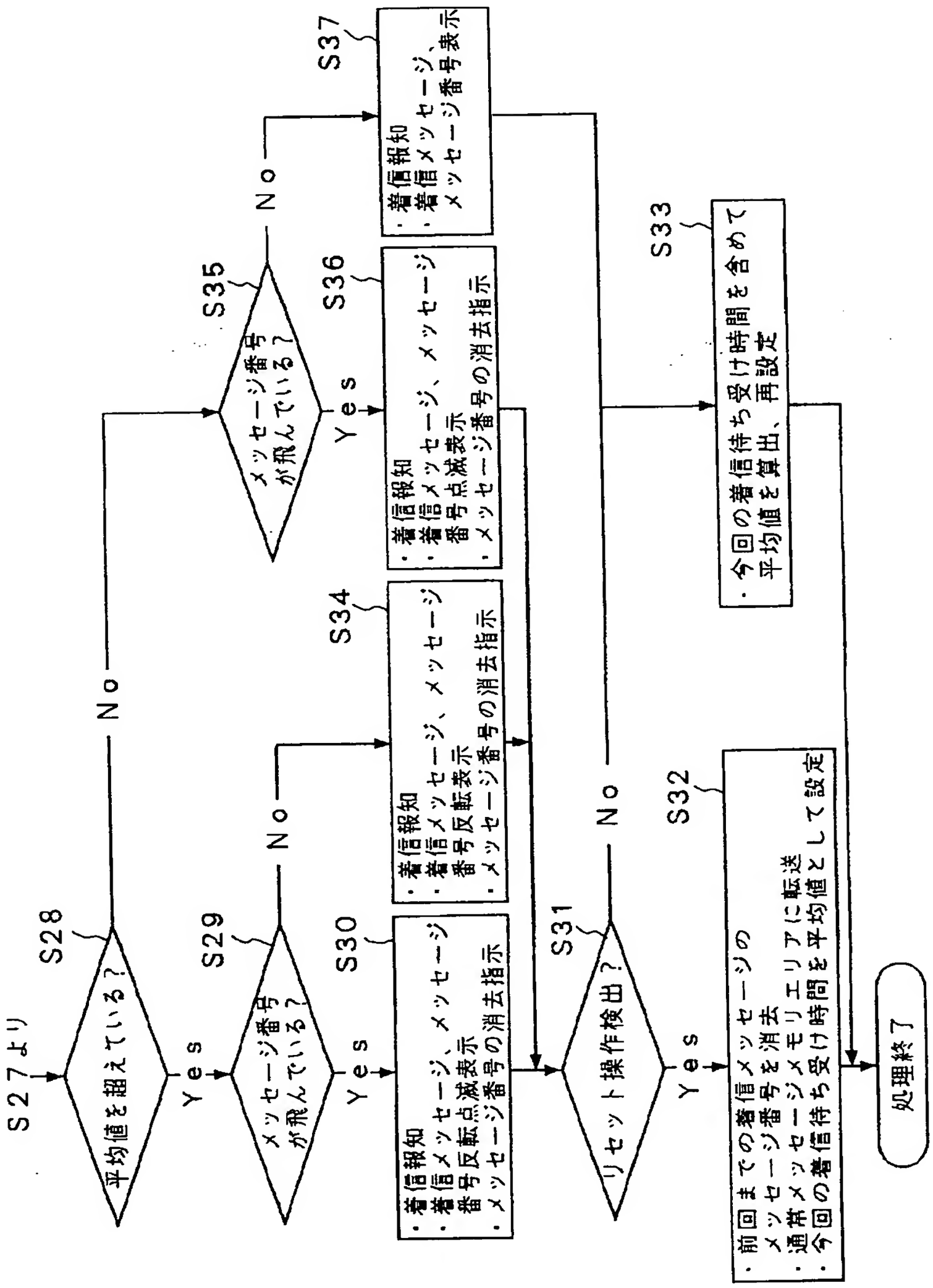
【図１９】


1時間
70
サイクル 0
サイクル 1
サイクル 2
サイクル 3
サイクル 4
サイクル 5
サイクル 14
4分
71
フレーム 0
フレーム 1
フレーム 2
フレーム 3
フレーム 4
フレーム 5
フレーム 127
1.875秒
72
同期部1 (S1)
フレーム情報 (F1)
同期部2 (S2)
ブロック情報 (B1)
アドレスフィールド (AF)
ベクトルフィールド (VF)
メッセージフィールド (MF)
アイドルブロック (IB)
72A
72B
72C
72D
72E
72F
72G
72H
同期信号部
インターリーブロック部
73
#0
#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
160ms
73A
73B

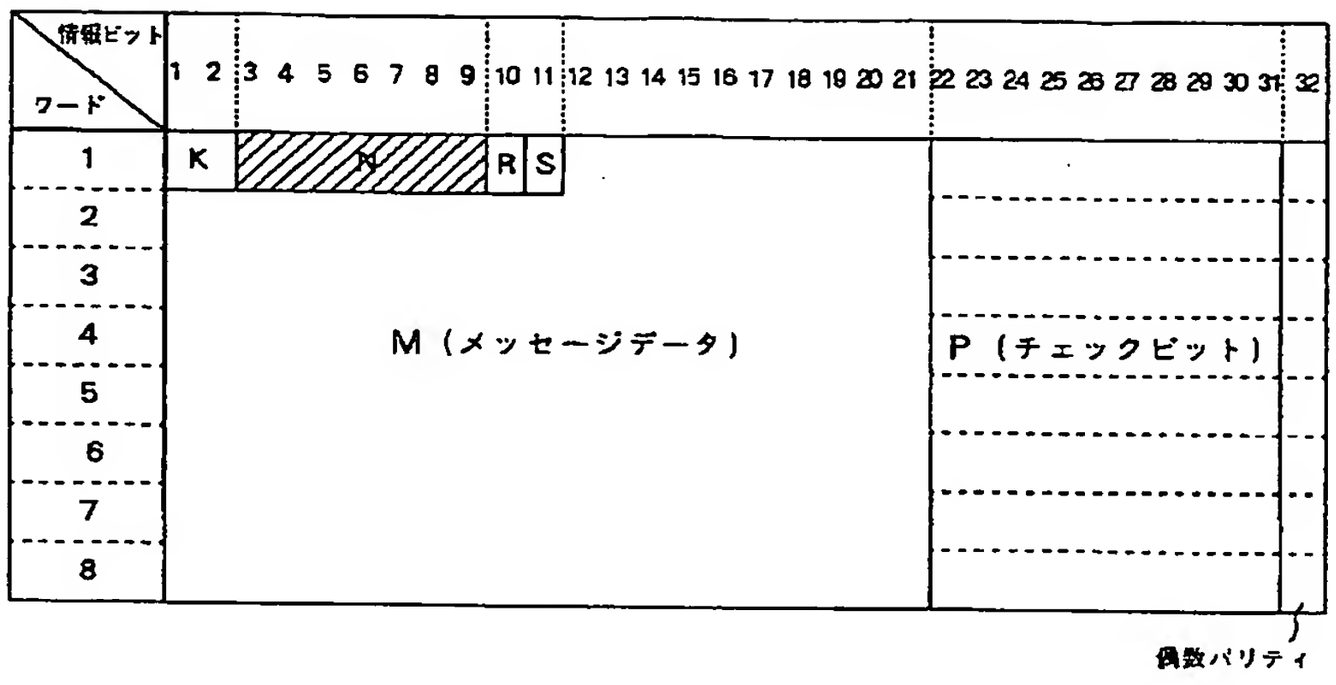
【図１７】


着信処理開始
S21
１フレームデータ取り込み
S22
アドレスデータ比較
S23
番号付きメッセージの
アドレスか？
No
Yes
S24
着信日時、及び、着信時刻計時
S25
着信待ち受け時間算出
S26
番号付きメッセージメモリエリアに格納
S27
着信待ち受け時間の平均値と照合
S28へ
S38
・着信報知
・着信メッセージ表示
処理終了

【図１８】


S27より
S28
平均値を超えている？
No
Yes
S29
メッセージ番号が飛んでいる？
No
Yes
S30
・着信報知
・着信メッセージ、メッセージ番号反転表示
・メッセージ番号の消去指示
S31
リセット操作検出？
No
Yes
S32
・前回までの着信メッセージの平均値を算出、再設定
・メッセージ番号を消去
・通常メッセージメモリエリアに転送
・今回の着信待ち受け時間を平均値として設定
S33
・今回の着信待ち受け時間を含めて平均値を算出、再設定
S34
・着信報知
・着信メッセージ、メッセージ番号反転表示
・メッセージ番号の消去指示
S35
メッセージ番号が飛んでいる？
No
Yes
S36
・着信報知
・着信メッセージ、メッセージ番号点滅表示
・メッセージ番号の消去指示
S37
・着信報知
・着信メッセージ、メッセージ番号表示
処理終了

【図２０】


情報ビット
ワード
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
1
2
3
4
5
6
7
8
K
N
R
S
M（メッセージデータ）
P（チェックビット）
偶数パリティ

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